Chapter 7. Perspectives on the Cultural Sequence of Mamasani

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7.1. The Mamasani Archaeological Project Stage One

The preliminary soundings that have been excavated at Tol-e Nurabad and Tol-e Spid, and the preliminary archaeological survey conducted in Dasht-e Rostam-e Yek and Dasht-e Rostam-e Do, have transformed our knowledge of the archaeological heritage of the Mamasani District. As observed in Chapter 1, this is a strategic but relatively unknown part of Fars, and while the excavations and landscape and surface survey have given us unique insight into the prehistoric and historic occupation in the region, they have also broadened and deepened our knowledge of the established cultural sequence of Fars, and provided an essential link in our understanding of the mountainous areas that lie between the better known plains of lowland Susiana and the highland Kur River Basin. As such, this research highlights the potential that regions traditionally considered as being peripheral can have for our understanding of the archaeology of southwestern Iran as a whole.

The Tol-e Nurabad Trench A and Trench B preliminary soundings have revealed that this site has the deepest and most chronologically protracted sequence of archaeological remains of any site thus far investigated in Fars. The mound appears to be comprised of archaeological deposits dating from the Neolithic period onwards, and judging from what is visible in sections that have been exposed at different points on the mound, a number of substantial mudbrick structures remain hidden within the unexcavated bulk of the mound. The radiocarbon determinations that have been analysed indicate that the site was occupied from at least 6000 BC, and material collected from the uppermost excavated deposits and the surface suggests that occupation continued until the Post-Achaemenid period in the late 1st millennium BC (Chapter 3).

Likewise, the preliminary sounding at Tol-e Spid has shown that it is comprised of high quality archaeological deposits, which appear to continue below the surface of the modern plain. These deposits are dominated by stone and mudbrick architecture, and an abundance of cultural material in primary contexts, the earliest of which are characterised by Lapui ceramic material. The radiocarbon determinations that have been analysed indicate that the site was occupied from at least 4000 BC, and certainly up until the late 1st millennium BC, well into the Post-Achaemenid period. The presence of residual ceramic material indicates that it may have been occupied considerably earlier, certainly during the Bakun period and potentially from as early as the Neolithic (Chapter 4).

From a methodological perspective, the results of the Tol-e Nurabad and Tol-e Spid soundings emphasise that extremely informative results can be obtained from small but well-excavated soundings that are focussed on sampling the entire preserved cultural sequence at a well stratified mound site (see also Chapter 5). In many respects, these soundings have been as informative and groundbreaking for our knowledge of the cultural sequence of the Mamasani District as those supervised by Perrot at Susa were for clarifying the cultural sequence of Susiana.

Significantly, the stratigraphic sequences at Tol-e Nurabad and Tol-e Spid do not always mirror each other. At times, both sites appear to have been occupied contemporaneously. Likewise, there are gaps in the occupation of each site, indicative of periods when both sites were probably abandoned. However, there were also periods when one of the two sites was occupied while the other was not, meaning that the excavated assemblages from the two sites not only reinforce, but also complement each other (see Figure 7.1).

The preliminary survey of sites in the Dasht-e Rostam-e Yek and Dasht-e Rostam-e Do plains supports the results obtained from the soundings by providing a fundamental insight into the broader environmental conditions in the Mamasani District (Chapter 2) and the nature of human settlement (Chapter 6). In addition to providing evidence for the intensity and distribution of occupation during the major periods attested in the soundings, the survey has also revealed evidence for a number of specific occupation phases that are either absent or poorly attested in the excavations, in particular, the Sasanian and Islamic periods. This emphasises that much will be discovered through further work in Mamasani.

Combining the results from the soundings with those from the surface survey provides a perspective on the changing nature of occupation in Mamasani through time, which in turn allows us to address a range of research questions that are region specific and others that are of broader significance. With the aim of providing an overview of the prehistoric and historical cultural sequences for Mamasani, perspectives on the different chronological phases attested in the region will now be presented, with specific reference being made to the relevant occupation phases at Tol-e Nurabad, Tol-e Spid and sites investigated during the surface survey.

7.1.1. Pre-6th Millennium BC Mamasani

As yet, no clearly pre-ceramic Neolithic sites or cave occupations have been discovered in Mamasani, although the cave site MS-30 remains a possibility. However, the surveying that has been carried out in the region has focussed on mound sites, and while numerous caves have been observed in the limestone ridges that surround the Mamasani plains, only a handful of these has yet been visited, and none rigorously investigated or excavated. Therefore, at present, it is not possible to coherently discuss occupation in Mamasani prior to the ceramic Neolithic period.

7.1.2. Mamasani in the 6th Millennium BC

The evidence thus far revealed for 6th millennium BC occupation in the Mamasani region is sparse, and the architectural, ceramic and faunal remains indicate that settlements in this period were inhabited by "Neolithic" (i.e. food producing) groups. In total, only five open air sites were recorded in the survey of Dasht-e Rostam-e Yek and Do, and all are located in the immediate vicinity of perennial water sources. In addition to these sites, we have the evidence for substantial Neolithic occupation at Tol-e Nurabad and some evidence for as-yet-unexcavated Neolithic deposits at Tol-e Spid. There is also the evidence of lithics from at least one cave site (MS30). Prior to the work of the Mamasani Archaeological Project, our knowledge of the Neolithic occupation of this part of Fars was limited to three mounds with possible Neolithic occupation that were identified by Stein during his brief passage through Mamasani (Stein 1940: 27-40), which led Sumner (1977: 302) to suggest that the density of Neolithic sites in the region was less than expected. Given that the Neolithic period in highland Fars potentially lasts more than a thousand years, the eight or so sites now known still suggest a very small-scale occupation in Mamasani during the 6th (and early 5th) millennia BC. Doubtless the list of known Neolithic sites will expand with future survey in the Dasht-e Nurabad, but the overall numbers are still surprisingly low given the region's size and favourable environmental conditions (see Chapter 2).

Of course, it is likely that some open-air Neolithic sites in the region have been destroyed through modern agricultural activities, while others may be completely covered by more recent alluvial sediments, and thus remain unrecorded. Tol-e Nurabad also provides an excellent example of the potential for substantial Neolithic deposits to be deeply buried beneath later archaeological deposits on a mounded site, even though there is very little in the way of surface indicators of their existence. This may also be the case at Tol-e Spid, where the excavations have almost reached the modern level of the plain, but have only reached deposits dating to the early 4th millennium BC. The presence of residual Neolithic soft-ware sherds in Lapui period and later contexts at Tol-e Spid suggests that there is likely to have been some Neolithic occupation there, which will only be revealed by further excavation.

Hole has noted that the earliest villages in southwestern Iran appear to occur in groups, and proposed that this might be related to the minimum size of 500 persons that is needed for a viable and self perpetuating local population (Hole 1987b: 83). As such individual villages would need to be closely allied to at least three or four other local villages through marriage and social ties, which in turn would lead to close similarities in the cultural material being used at those sites, particularly the ceramics (Hole 1987b: 83; see below). Hole does not define strict limits for how close sites must be to constitute a cluster[1], and although the sites with Neolithic occupation in Mamasani range from being between less than 1 km and to up to 15 kms apart, it is only in the Dasht-e Rostam-e Do that a tight cluster of sites has been identified. It is, however, by no means clear whether these sites were occupied contemporaneously (see below). Nevertheless, if this model of early sites being grouped in clusters holds for Mamasani, then other Neolithic period sites may well be discovered in both the Dasht-e Rostam-e Yek and the Dasht-e Nurabad.

What is certain is that there is a protracted sequence of Neolithic occupation at Tol-e Nurabad, with the Neolithic deposits at the site constituting 10 discrete phases. With the exception of the earliest (Phase A27), they are tightly constrained chronologically by a series of radiocarbon dates. Phases A26 to A20 are radiocarbon dated to the first half of the 6th millennium BC. Excavation revealed a series of substantial superimposed mudbrick structures suggestive of sedentary occupation, a hypothesis possibly supported by the zooarchaeological evidence for the prevalence of commensal rodent species throughout the Neolithic sequence. Faunal analyses further indicated an almost complete reliance on domesticated animals as a meat source, principally caprids, but with small proportions by Number of Identified Species (NISP) of bovids and (possibly wild) suids (see Chapter 5.4, Table 5.2b, Figures 5.14a-b). Although these findings may be partially compromised by the limited scale of the excavations, comparisons with analysed faunal assemblages from the Kur River Basin nevertheless provide the first hints of regional differences in food procurement practices across Neolithic Fars (see Chapter 5.4, also Figure 5.15).

In terms of ceramic remains, the Neolithic phases at Tol-e Nurabad contain a small but significant proportion of sherds with decorative schemes comparable to the material from the Kur River Basin (see below). However, in the main they illustrate the development of a unique and distinctive regional painted ceramic tradition, which was in use in the period from 6000-5500 BC, within substantial mud-brick and chineh dwellings that are likely to have been occupied year-round. Within such a small population, it is likely that ceramic production will have been a household activity, although the quality of the ceramics suggests that particular individuals within those households or within individual villages specialised in ceramic production (see Costin 1991; 2001; Tite 1999). The presence of a regionally distinctive ceramic tradition correlates with Hole's model of early period site clusters, and the suggestion that within such a system, there is likely to have been greater movement of people within any one region through marriage etcetera, than there was through direct exchange of people between regions, whether they be potters or marriage partners (Hole 1987b: 83).

Subsequent to the earlier phases of Neolithic occupation at Tol-e Nurabad (Phases A26-A20), there is a very long gap in the radiocarbon dates to Phase A19, in the early 5th millennium BC, which is characterised by an increased proportion of plain slipped and burnished chaff-tempered wares. It is by no means certain that this long occupational gap in the Trench A deposits exists across all of Mamasani, and it is doubtful that even the site itself was completely abandoned at this time. The surface collections at Tol-e Nurabad and the survey in the Dasht-e Rostam-e Yek and Do provide ample evidence of ceramic painted styles and motifs that are not attested in the excavated Tol-e Nurabad Neolithic sequence, and suggest that occupation may have continued elsewhere on the mound in the half a millennium during which the Trench A area was not occupied. Excavated and quantified ceramic assemblages from sites in Mamasani dating to this period will be required before our field data can be interpreted with more chronological precision than currently available.

Regardless, it is clear that whilst there are general similarities between the late Neolithic plain wares of Mamasani and other parts of Fars (and further a field), the continuation of painted pottery into the Late Neolithic distinguishes Mamasani from contemporary Shamsabad sites around 100 km to the east in the Kur River Basin. Thus, it appears that the pattern of ceramic regionalism that emerged in the early part of the Fars Neolithic sequence (see Miroschedji 1972; Sumner 1977) continued to develop over the course of the 6th millennium BC (see Petrie in press a).

In a wider regional perspective, modified chronological periodisations for Neolithic Fars have recently been proposed by Abdi et al. (2003; see also Bernbeck et al. 2004), Alden et al. (2004: Fig. 2) and Alizadeh (2004; 2006; Alizadeh et al. 2004), with each drawing upon the results of excavations and survey in the Kur River Basin undertaken since 2003. While the periodisations of Abdi et al. and Alden et al. follow the prevailing Fars sequence, Alizadeh's radical re-interpretation of the Neolithic chronology of Fars is based upon new excavations at the critical sites of Tall-e Mushki, Tall-e Jari A and B, and Tall-e Bakun B (see Chapter 1.4, n.9). Whilst there are inherent problems with re-assessing the relative chronology of the Kur River Basin from evidence excavated in Mamasani, the ceramic evidence from Tol-e Nurabad has some obvious and important implications for these recent chronological debates. In particular, the stratigraphic position of the Tall-e Mushki and Tall-e Jari A3 related pottery at Tol-e Nurabad seems clear proof that the Mushki period predates the Jari period in Mamasani. This issue has remained somewhat in doubt for the Kur River Basin, due to a lack of excavation of clearly stratified sequences and the very few available radiocarbon determinations (Fukai et al. 1973: 74-83; Sumner 1977: 299; Voigt and Dyson 1992: I, 135-136). It is to be hoped that further excavations at Tol-e Nurabad will uncover more extensive and deeply-stratified Mushki period deposits, in order to examine both the development of Mushki settlement and technology and the transition to later periods.

Overall, it is clear that the evidence from excavation at Tol-e Nurabad supports the relative chronology for Neolithic Fars recently proposed by Alden et al. (2004) and Alizadeh (2006). The absolute chronology proposed here, however, is substantially different from that put forward by Alden et al. This is primarily due to the suite of reliable and precise radiocarbon dates from post-Mushki period excavated deposits at Tol-e Nurabad, which provide a *terminus ante quem* for the end of the Mushki period. Given the radiocarbon dates in the very early 6th millennium BC that have been obtained for the post-Mushki deposits at Tol-e Nurabad (i.e. Phase A26 and later), it seems likely that Mushki period occupation in Fars began sometime in the late 7th millennium BC. Further support for this proposition is provided by the programme of radiocarbon analyses for the Mushki-Bashi deposits at Toll-e Bashi (R. Bernbeck and S. Pollock, pers. comm.), and two sets of new dates from Tall-e Mushki (Alizadeh 2006: Appendix A, Tables 9-11). The Mushki-Bashi levels at Toll-e Bashi date as early as the last century of the 7th millennium BC, whereas some of the determinations from Tall-e Mushki push back well into the mid-7th millennium BC.

7.1.3. Mamasani in the 5th Millennium BC

On the basis of the preliminary survey and the excavations at Tol-e Nurabad, it appears that “Neolithic” slipped and burnished chaff-tempered ceramics were in use in Mamasani from the 6th millennium into the early 5th millennium BC. However, at around 4800/4700 BC, there was a transition to the use of relatively fine “Bakun” buff ware ceramics with painted decoration (Phase A18). Following this, there are multiple phases of Bakun period occupation attested at Tol-e Nurabad (Phases A18-A14); comprising a depth of approximately 3 m of deposit which is, unfortunately, almost entirely lacking in preserved structural remains. The radiocarbon dates for these phases span the period from c.4800/4700 to 4000/3900 BC, with a *terminus ante quem* being provided by a series of radiocarbon determinations on stratigraphically later Lapui period deposits at Tol-e Nurabad and contemporaneous dates from Tol-e Spid that span the range from c.4000-3700 BC (see Figure 7.1).

The zooarchaeology remains from these phases at Tol-e Nurabad show a broad similarity with those from the Neolithic phases, with a continued predominance of domestic caprids and an apparently minor increase in the proportion of domestic bovids (by NISP; see Chapter 5.4, also Table 5.2b, Figures 5.14a-b). In contrast to evidence for the presence of commensal rodent species in the Neolithic phases, rodent remains were extremely rare in the Bakun period deposits (see Table 5.2a).

Fragments of black-on-buff Bakun painted pottery were also recovered as residual material from various phases in the Tol-e Spid sounding, although they have not yet been found in primary contexts. None of this material is diagnostic enough to allow its attribution to any one sub-period, although its presence indicates that Bakun period occupation is likely to have existed at the site.

The survey of the Dasht-e Rostam-e Yek and Do plains has provided evidence for occupation in the Bakun period at 11 sites. On the basis of the data collected thus far, it can be tentatively suggested that there was a progressive increase in the number of sites occupied in the Early, Middle and Late Bakun phases (e.g. Sumner 1994b; see below).

The situation documented by our fieldwork in Mamasani can be readily paralleled in contemporary Fars, where Bakun-related buff wares characterise archaeological assemblages from the 5th millennium BC, and where a chronological succession from soft-wares to buff wares has been established by excavations at Tall-i Bakun B and Tall-i Jari A. At present, there is no clear impression of the nature and archaeological implications of this ceramic transition in Mamasani, and more generally in Fars.

Bakun Origins

Unlike in Khuzestan, where there exists a well documented transition from Archaic to Early Susiana seen at sites such as Chogha Mish (Delougaz and Kantor 1996: 296), until recently there has been no evidence for continuity in ceramic technology or decoration in prehistoric Fars from the Neolithic to the Bakun period. As a result, some explanations for this phenomenon have focussed upon the possibility of large-scale migration of human groups into Fars in the 5th millennium BC (e.g. Alden 1982; Alizadeh 2006).

The recent excavations in Fars by Alizadeh (2004; 2006; Alizadeh et al. 2004), however, have uncovered evidence that may be of significance for understanding the transition from the soft-ware ceramic horizon of Neolithic Fars to the buff-ware assemblages of Chalcolithic Fars. In discussing excavations at Tall-i Jari A, Alizadeh (2004: 6) noted that:

> ". . . a progression towards a finer buff ware sometimes has the white slip/wash signature of the typical Jari painted pottery. Almost all of the finer pieces are plain, but towards the end of the sequence; simple vertical or horizontal bands painted in dark appear on some examples".

Assuming that this plain material dates to the beginning of the Fars Neolithic sequence, Alizadeh has taken this as evidence for the development of technological and decorative techniques that characterised Jari painted pottery. However, if as argued here (see Chapter 1.4, n.9), this material actually dates to the end of the Fars Neolithic sequence, such developments could equally be seen as leading to the black-on-buff painted ceramic tradition that characterises Bakun period Fars.

Certainly, buff wares were being produced at the same time, and even earlier in Khuzestan, and their influence might well be seen in the white slipped and painted vessels of the late Shamsabad phase at Tall-i Jari A. Such "emulation" does not rule out the possibility of large-scale migration into Fars in the early Bakun period as favoured by Alizadeh, but does at least raise the possibility of some degree of cultural continuity in the region across the Neolithic-Bakun boundary[2] (see Petrie in press a).

The difficulty of assessing the nature of this transition in Mamasani arises from the small size of the excavated areas at Tol-e Nurabad, the lack of demonstrable chronological continuity from Phase A19 (Neolithic) to A18 (Bakun), and the possible confounding factor of residual and intrusive potsherds. In short, it is difficult to say whether Bakun buff wares and Neolithic soft wares were utilised contemporaneously at Tol-e Nurabad, and whether the replacement of one production technology by the next was precipitous or more gradual. Certainly, the radiocarbon dates from Phase A19 (characterised by chaff-tempered wares and rare buff wares) and Phase A16 (painted buff wares only) are similar, and if accurate, suggest that the change from the chaff-tempered Neolithic pottery to painted buff ware was a relatively rapid phenomenon. Nevertheless, whether the apparently abrupt transition in ceramic technologies can be interpreted in terms of human migration to Fars as opposed to, for example, exchange or technology transfer, is an issue that will require more data than that provided solely by the metric analysis of ceramic assemblages (cf. Blackman 1989: 104).

It is worthwhile considering, in this context, that the replacement of Neolithic wares by painted buff wares in Mamasani and the Kur River Basin represents a local example of a geographically and chronologically protracted process that was occurring across western Iran. Buff wares appear alongside or replace local ceramic industries in the 6th and 5th millennia BC in the central Zagros (J-ware to Siahbid phases), the Deh Luran plain (Surkh to Chogha Mami Transitional and Sabz phases), in the valleys of Fasa and Darab (post Jalyan/Bizdan phases), and as far south and east as Tepe Yahya (Period VI to Period V) and Tall-i Iblis (Period I to Period II) (Voigt and Dyson 1992). This phenomenon can be seen as just one component of the spread of Ubaid-related buff-wares across parts of Western Asia as far north and west as Turkey and Syria, and from southern Mesopotamia to sites in the south and east as far as Saudi Arabia, Qatar, and the United Arab Emirates (Weeks et al. in press). It is clear that processes beyond simple migration are necessary to account for such widespread and protracted material changes in the archaeological record of Chalcolithic Western Asia. However, it remains to be demonstrated whether this so-called 'Ubaid phenomenon' was actually the product of interconnected or discrete processes, which might have involved factors such as long-distance interaction and exchange; cultural expansion, influence and/or domination; local cultural dynamics; human-environment interactions, or combinations of a number of such factors (see Carter, R. and Philip (Eds). In press).

Bakun Chronology and Development

As outlined in Chapter 1.4, the stratified ceramic material from the Bakun sites that have been excavated in the Kur River Basin and the neighbouring areas (e.g. Tall-i Bakun A and B, Tall-i Gap, Tall-i Jari and Tall-i Nokhodi) has been used to establish a relative chronology for the 5th millennium BC based on decorative motifs (after Voigt and Dyson 1992: I.137-140), although there is no absolute consensus on the attribution of individual occupation phases to specific sub-phases (e.g. Alizadeh 2006). Nevertheless, it has been possible to broadly attribute material from Mamasani to each of the three phases, as they have been defined for this volume (see Chapter 1.4; Figure 1.3).

The earliest painted buff wares from Tol-e Nurabad (Phase A18) are comparable to material from Tall-i Bakun BII and Tall-i Jari A1 (see Chapter 3.8.2), and they can be distinguished from the later Bakun phase material through the appearance of elaborate interior decoration, dense cross-hatched geometric decoration, and anthropomorphic and zoomorphic designs (see Chapter 3.8.2). The radiocarbon determination from Phase A18 falls entirely within the 6th millennium BC and is stratigraphically inconsistent with the two dates from Phase A19 (see Chapter 3.7), making it impossible to date it absolutely. In Phase A17, there is a smaller proportion of large thick-walled storage vessels, and a higher proportion of thin walled vessels and plain deep bowls. The use of simple vertical lines is also introduced, and this has clear parallels in the Middle Susiana assemblage. A number of complete vessels from Phase A16 in particular have a number of very clear parallels with Middle Bakun material from Tall-i Gap (IIb), Tall-i Bakun A (III) and Tall-i Ghazir (Step Trench 1-6). This relative dating is seemingly confirmed by the absolute date from Phase A16, which falls in the early-mid 5th millennium BC (see Chapter 3.7). Unfortunately the later Chalcolithic deposits at Tol-e Nurabad (Phase A14) are characterised by a ceramic assemblage that is dominated by plain buff ware, which is difficult to parallel in either Fars or Susiana, where the sequences are based on decorative motifs. As a result, it is not certain whether the Phase A15-A14 deposits represent a Late Bakun phase of occupation at Tol-e Nurabad. However, a number of residual Bakun sherds from higher up in the sequence have good parallels with material from Tall-i Bakun A, indicating that there was probably Late Bakun occupation somewhere at Tol-e Nurabad, and emphasise the vagaries that may result from such a small sampling unit.

As noted above, the survey of the Dasht-e Rostam-e Yek and Do plains has provided clear evidence for occupation in the Bakun period. Ideally, it would be possible to tentatively assign the Mamasani Survey sites to Early, Middle and Late sub-phases of the Bakun period, particularly through the establishment of ceramic parallels with the Tol-e Nurabad sequence and with the Kur River Basin and Susiana ceramic sequences. However, the number of Bakun sherds recovered from many sites was limited, so it has often been difficult to confirm reliable attributions for individual sub-periods. As such, while it has been possible to suggest that some sites may have been occupied during one or more of the sub-phases, this should not rule out the possibility that they were also occupied during other sub-phases. Nevertheless, it does appear that there was a progressive increase in the number of sites occupied in the Early, Middle and Late Bakun phases. This contrasts with the situation reconstructed for the Kur River Basin at this time, in which the Middle Bakun period witnesses the maximum extent of Bakun occupation, before a dramatic decline in settlement numbers in the Late Bakun period (e.g. Sumner 1994b; see below).

The quality of the Bakun pottery coupled with evidence of kilns, production debris and ash deposits at Tall-i Bakun A and the discovery of what appear to be other sites in the Kur River Basin devoted to ceramic production, has been used as evidence for ceramic production being what Sumner has referred to as a ‘specialised craft industry’ throughout the Bakun period (Sumner 1994b: 59; see also Berman 1987; 1989). Evidence for ceramic production has been recovered from Tall-i Bakun A and a number of other sites in the Kur River Basin (e.g. Sumner 1994b: 59; Alizadeh 1988; 2006), and the surrounding regions (e.g. Tappeh Rahmatabad and other sites in the Tang-i Bulaghi), however, it is not clear whether any of these sites were exclusively devoted to ceramic production, so it is not clear to what level ceramic production is concentrated in these locales, and there doesn’t appear to be any evidence for specific ‘products’ being produced at any one site. Evidence for other types of craft specialisation and administrative technology have also been discovered at Tall-i Bakun A (Sumner 1994b: 59), but as yet, no such materials have been recovered from any of the sites in Mamasani. However, as Alizadeh has argued (2003b: 89), it is unlikely that the vast geographical distribution of Bakun painted pottery was the result of long-distance trade. No evidence for Bakun period ceramic production has yet been discovered in Mamasani. Preliminary compositional analysis of 5th millennium BC ceramic material from Tol-e Nurabad shows that the Bakun material has a distinct elemental composition, but it is not clear how this relates to material from elsewhere in Mamasani, as no samples of Bakun material from Tol-e Spid or sites discovered in the Mamasani Survey have yet been analysed (Petrie et al. in preparation).

7.1.4. Mamasani in the 4th Millennium BC

The five phases of Lapui period occupation revealed at Tol-e Spid (Phases 24-20) represent the first deeply-stratified sequence of early–mid 4th millennium BC red ware ceramics to have been excavated in Fars. While these phases are all characterised by the distinctive burnished grit ware, it is notable that the polished red and red-slipped wares were not recovered from the earliest of the phases. This suggests that there is a degree of internal development in the composition of the Lapui assemblage through time, despite the general continuity in vessel form, but this will need to be confirmed by further excavation. The two fragments of fine grit-tempered orange ware with bi-chrome purple and red painted decoration recovered from Phase 23 are distinct from other contemporary painted traditions known in Fars, and their presence further emphasises that there is much to be learned about the 4th millennium BC ceramic wares in the Mamasani region. Following these Lapui phases at Tol-e Spid, there is evidence for a Lapui-Banesh transitional phase (Phase 19), which has significance for our understanding of moves towards complexity and long-range contact in the mid-4th millennium BC (see below). Above this there is one subsequent phase characterised by distinctive Banesh style pottery (Phase 18), which is best known from the excavations at Tal-e Malyan. The presence of this sequence of deposits suggests that the site was occupied throughout the 4th millennium BC, although it remains to be demonstrated whether or not this occupation was more or less continuous.

Tol-e Nurabad presents a similar sequence of occupation that also spans much of the 4th millennium BC, although it appears that the Lapui period phases (Phases A13-A12) date somewhat later than those at Tol-e Spid (see below). As at Tol-e Spid, there also appears to be evidence for a Lapui-Banesh transitional phase at Tol-e Nurabad (Phase A11-A10), and in contrast to the one phase of Banesh period occupation at Tol-e Spid (Phase 18), the transition is followed by several phases of Banesh period occupation at Tol-e Nurabad (Phases A9-A6). If they are representative of the sites as a whole, the two sequences taken together suggest that Tol-e Spid was occupied more intensively than Tol-e Nurabad in the earlier 4th millennium BC, while Tol-e Nurabad was occupied more intensively than Tol-e Spid while in the later 4th millennium BC (see below, also Figure 7.1).

Although caprids remains dominate the faunal assemblage from Lapui period Tol-e Spid in terms of the NISP, a significant minority of bovid remains (by NISP) could potentially have contributed as much or even more meat for consumption (Table 5.4b, Figures 5.14a-b). A similar pattern is observed in the Late Lapui period deposits at Tol-e Nurabad (Table 5.2b, Figures 5.14a-b), although the faunal assemblage for those phases is very small. With the Banesh period deposits at Tol-e Spid, there appears to be a significant increase in the proportion of bovid and suid remains (by NISP; see Table 5.4b, Figures 5.14a-b), while at Tol-e Nurabad, there is a relative reduction in the proportion of bovids (see Table 5.2b, Figures 5.14a-b), although the assemblages from both sites are relatively small.

In contrast to the Kur River Basin, the Mamasani Survey has indicated that there appears to have been an increase in the number settlements between the Bakun and Lapui periods in the region, including the foundation of at least one larger than average site in the Dasht-e Rostam-e Yek (Tappeh Mishband MS 39 – 1.5 ha), which lies less than 6 km from Tol-e Spid with its extended sequence of Lapui occupation (see Plate 16). This has interesting implications for the suggestion that the reduction in the settled population in the Kur River Basin during the Lapui period was correlated with a shift towards mobile pastoralism as a subsistence strategy, which was in turn significant for the rise of Banesh period urbanism (Sumner 1986b; see below). There is however, only limited evidence for occupation in Mamasani during the Banesh period other than at Tol-e Nurabad and Tol-e Spid. Although this may reflect a genuine reduction in the settled population, as witnessed in the Kur River Basin, it might also be a result of not differentiating the Banesh vegetal and grit-tempered wares from similar wares recovered in surface collections, and also the discovery that in Mamasani, visually similar red-slipped wares were used in both the Lapui and Banesh periods (see below).

Lapui Origins and Developments

Distinctive red-slipped and coarse burnished Lapui red wares have been found on the surface of more than 100 sites in the Kur River Basin and were first recovered in excavations from the disturbed upper layers at Tall-i Bakun A. Although it is not clear whether these red wares co-occurred with Bakun A buff wares in these levels, there is clear evidence that they co-occur in deposits dating to the earliest 4th millennium BC at Susa, Tall-i Ghazir and Tepe Yahya (see Chapter 1.4). This implies that it is likely that there was some transition between the two cultural assemblages in different parts of southwestern and southern Iran, rather than an abrupt change. This has also been suggested by studies of the technological changes involved in the shifts between the ceramic wares (Blackman 1989). In this context, it is significant that fine red-slipped wares appear together with Bakun buff-ware in Phases A13 and A12 at Tol-e Nurabad. While at first, this seems to confirm the suggestion that the two wares are somewhat contemporaneous at this site, there are a number of factors that argue against this conclusion. Firstly, buff wares continue to make up a significant proportion of the Tol-e Nurabad Trench A ceramic assemblage as late as Phase A9, which is characterised by bevelled-rim bowls; secondly, this combination of ceramic wares has not been observed in the five phases of Lapui period occupation thus far identified at Tol-e Spid (Phases 24-20), although admittedly the earliest phase of Lapui occupation has yet to be revealed; and thirdly, the radiocarbon determination from Tol-e Nurabad Phase A13 suggests that it and Phase A12 actually date to the later part of the Lapui period (see Chapter 3.7). It is not yet possible to determine whether the deposits seen in the Trench A sounding are at all representative of the Lapui period occupation at the site, and this will only be possible through further excavation. The fact that buff wares do not form a significant component of the Tol-e Spid Lapui period ceramic assemblages suggests that the buff wares recovered from Tol-e Nurabad Phases A13-A9 are most likely residual.

The approaches to ceramic paste preparation, vessel production techniques and finishing processes that were used to produce these distinctive Lapui red wares represent a marked shift from the approaches used to produce the black-on-buff wares of the Bakun period, and this is particularly noticeable with in the selection of raw materials (see Blackman 1989: 104). As noted above, there is clear evidence for discrete Bakun period ceramic production sites in the Kur River Basin, and while these have been used as evidence of specialised ceramic production (e.g. Sumner 1994b: 59; Alizadeh 2006), the nature of the organisation of this production is not clear. Bakun period ceramics do not show signs of the use of the wheel, and are generally decorated in a wide variety of motifs that do not suggest they were mass produced, or even that specific vessel forms were being produced in specific locations, although much remains to be done in terms of understanding the distribution of motifs. In contrast, the Lapui period ceramics typically lack decoration, the evenness of the rim forms and evidence of rilling, particularly on some Lapui fine ware vessels, indicates that they may have been produced using a turning device, and the uniformity of most of the vessel forms shows that steps were being made towards standardising the assemblage. Also the Lapui coarse ware appears to have been produced from clay with naturally occurring coarse inclusions, while the fine ware is either made from fine low calcium clay, or fine high calcium clay and a low-calcium red slip (Blackman 1989: 104-105). Taken together, these shifts suggest that there were moves towards efficiency and increased product specialisation between the Bakun and Lapui periods, with the likelihood that specific locations would have been involved with the production of specific wares. Blackman has argued that the changes between the Bakun and Lapui period approaches to the organisation of production need not be a result of the introduction of new technology through diffusion, innovation or migration, but may be culturally based (Blackman 1989: 105). Preliminary compositional analysis of 4th millennium BC ceramic material from several sites in Mamasani has shown that several sources of raw materials were being exploited in the region during the Lapui period, and the coarse and fine wares were produced using compositionally distinct raw materials. (Petrie et al. in preparation). With further open area excavations at sites like Tol-e Spid, Tol-e Nurabad and Tappeh Mishband, and further analysis that combines stylistic[3] and technological examination with chemical chatacterisation, it will be possible to determine the degree of uniformity and/or homogeneity of the vessels, and thereby provide an indicator of the degree to which the Lapui vessels in use in any one phase might have been produced in a specific locale or locales, and thereby giving insight into how ceramic production might have been organised in the Lapui period (c.f. Blackman 1989: 106).

It has not yet been possible to establish the area of the Lapui period occupation at either Tol-e Nurabad or Tol-e Spid, and the largest of the other sites with Lapui period occupation, Tappeh Mishband is only 1.5 ha in size. The majority of Lapui period settlements recorded in the Kur River Basin were less than 2 ha in size, and only 4 sites were between 2 and 3.5 ha (Sumner 1988b: Fig. 4). Although Lapui material was found on the surface at Tal-e Malyan and one 15 ha site, Sumner has argued that soundings and intensive surface collections have not produced evidence for extensive Lapui period occupation at either site (Sumner 1988b: 32-33). On the basis of the size of Lapui period sites in Mamasani and the size of those that have been identified in the surveys of the Kur River Basin (Sumner 1988b), it seems likely that the population of Fars in the early-mid 4th millennium BC was still living in villages.

Banesh Origins

Subsequent to the Lapui period phases at both Tol-e Spid and Tol-e Nurabad, there is evidence for what appears to be a transitional period where the use of Lapui type grit-tempered and red-slipped wares continue, but where distinctive vessels made from vegetal- and vegetal and grit-tempered wares begin appearing (TS Phase 19; TN Phases A11-A10). Phase 19 at Tol-e Spid presents the earliest example of a bevelled-rim bowl to appear at the site, and it occurred in a deposit that has been radiocarbon dated to between c.3760-3520 BC. By itself, one fragment of a bevelled-rim bowl need not be significant, and could easily be regarded as a taphonomic anomaly. However, this combined with the presence in the same phase of a unique jar that appears to be a hybrid of a typical Lapui form, an unusual fabric and a decorative style similar to that used on Banesh period vessels, and the presence of several bevelled-rim bowl fragments in Phases A11-A10 at Tol-e Nurabad, suggests that there was a transitional phase between the Lapui and Banesh period occupations in Mamasani. Although it has not usually been acknowledged in the wider literature, bevelled-rim bowl fragments have also been recovered from both the Terminal Lapui and Initial Banesh strata at Tal-e Kureh, which are presumed to date before 3400 BC (Alden 2003a: 196, Table D1). These phases provide clear evidence for a Lapui-Banesh transition in the Kur River Basin in all but name (Alden 1982: 155). In the Mamasani Survey, Banesh period occupations were primarily attributed on the basis of the appearance of bevelled-rim bowls, but the excavations at both Tol-e Nurabad and Tol-e Spid have shown that this form could potentially date to both the Lapui-Banesh transition and the Banesh period proper. Until further surface collections and analysis is carried out, it will not be possible to establish whether it is possible to differentiate transitional and Banesh material at these sites.

It is inviting to view this early presence of bevelled-rim bowl fragments at sites in the highlands of southwestern Iran as being profoundly significant. However, perhaps more than any other prehistoric vessel form, the bevelled-rim bowl has prompted both hypothesis and hyperbole[4]. What is clear is that the mid-4th millennium BC occupation in Susiana witnesses a cultural break with the preceding Susa I cultural assemblage, and there was a wholesale appearance of an ostensibly Mesopotamian ceramic assemblage made up of distinctive vessel shapes including the bevelled-rim bowl (Susa II assemblage; see Johnson 1973; Voigt and Dyson 1992: I.132-133; Wright 1998). This has been interpreted variously as an endogenous development (Johnson 1973; Wright and Johnson 1985: 29), or a reflection of the Mesopotamian leanings of a numerically dominant part of the Susian population (Amiet 1979: 198; 1992: 80) on the one hand, to the conception of there being outright colonisation (Algaze 1993: 15-17, 2008), political domination (Lamberg-Karlovsky 1996: 92), or an infiltration of independent agriculturalists and craftsman of people from southern Mesopotamia (Potts 1999: 65). A recent study of previously unpublished material from Godin Tepe by Virginia Badler (2002: 81, 84) has shown that at roughly the same time (Middle and Late Period VI), bevelled-rim bowls began appearing at Godin Tepe (Central Zagros), some time prior to the well known 'Late Uruk' Period V Oval Complex. In Middle and Late Period VI, these forms appear as part of a ceramic assemblage that is otherwise local in character (Badler 2002: 81, 84). In the Kur River Basin, this period is only represented by the Terminal Lapui and the Initial Banesh phase deposits excavated at Tal-e Kureh, which, as noted above, are marked by the appearance of bevelled-rim bowls, but also by the absence of low-sided trays, incised shoulder decoration and the reserved slip decoration so common in Susa II and Uruk period sites in Mesopotamia (Alden 2003a: 187-188, 196-198).

Alden has previously argued that the rise of Banesh period complexity was an indigenous highland development, accompanied by substantial immigration into the Kur River Basin from Khuzestan (Alden 1979: 166; 1982: 620; also Lamberg-Karlovsky 1978: 116; 1996: 112-113; see below). In contrast, Sumner (1986b: 200) has argued that similar evolutionary processes were operating in both Susiana and the Zagros Highlands, which "simultaneously produced the first stages of Proto-Elamite civilization", and he has suggested that these developments were internally motivated and connected to the transition to mobile pastoralism that resulted from a progressive agricultural crisis (Sumner 1986b: 200, 207; 2003: 113; see below).

There should be little doubt that the bevelled-rim bowl in particular is intrusive into the highlands, but it is the significance of their presence that remains difficult to isolate[5]. Material parallels led Alden to propose that the Early Banesh phase in the Kur River Basin is contemporaneous with the latest Susa II levels (Acropole I.17 and 17x; Sumner 2003: 52-53), and this suggests that his Terminal Lapui and the Initial Banesh phases are partially contemporaneous with the earlier Susa II period in Susiana, presumably Acropole I Levels 22-18. While the small size of the soundings excavated at each of the sites in Mamasani means that our observations can only be speculative, it is plausible that Phase 19 at Tol-e Spid and Phases A11-A10 at Tol-e Nurabad are contemporaneous with the Terminal Lapui/Initial Banesh and/or the Early Banesh phases in the Kur River Basin[6], suggesting that they are also congruent with some part of the Susa II occupation in Susiana. Unfortunately the lack of reliable radiocarbon dates from either Tal-e Kureh or the relevant levels at Susa make it difficult to substantiate these relative correlations (see Voigt and Dyson 1992: II, Table 2; Wright and Rupley 2001, also Petrie in press b)[7].

The presence of bevelled-rim bowls in deposits dating to the mid-4th millennium BC at Tol-e Nurabad and Tol-e Spid, augments those found at Tal-e Kureh, and reminds us that the distribution of this vessel form in southwest Iran at this time is not limited to lowland Susiana. The appearance of this form in transitional period deposits at these sites also presages the marked developments that take place in the Banesh period proper, where both local and intrusive mass-produced vessel forms become far more common (see below). There should be no doubt that the presence of these transitional phase deposits have significant ramifications for our understanding of the chronology and distribution of the spread of Uruk cultural material into Iran, and for our understanding of the origins, development and spread of the Susa III/Proto Elamite horizon (see below; also Potts 1999: 69-83; Petrie in press b).

Banesh Developments and Dynamics

The Banesh period is critical for our understanding of the development of social, economic and political complexity and the rise of urbanism in highland Iran. However, prior to the excavation of the soundings in Mamasani, there was nothing known about the Banesh period in Fars outside the bounds of the Kur River Basin. As such, we have little idea of the developments that were taking place in the regions neighbouring the Kur River Basin both before and during this critical period of development. The excavation of the soundings at Tol-e Spid and Tol-e Nurabad has changed this dramatically.

Of the Banesh period occupation phases at the two sites, Phase 18 at Tol-e Spid has been dated to c.3370-3030 BC (Wk13982) and presents a ceramic assemblage that closely resembles the Middle Banesh assemblage known from Tal-e Malyan. The Phase 18 assemblage is marked by the predominance of mass-produced vegetal- and vegetal and grit-tempered wares and vessel forms such as the bevelled-rim bowl and the low-sided tray, together with a variety of grit-tempered goblet shapes. With the exception of the bevelled-rim bowl, these forms are essentially new to the region at this time. However, together with this material, there is clear evidence for continuity of the tradition of manufacturing red-slipped ware vessels, which has not been observed at either Tal-e Malyan or Tal-e Kureh, the only Banesh period sites excavated in the Kur River Basin (see below).

The Banesh period deposits at Tol-e Nurabad (Phases A9 to A7) have been dated to c.3360-3010 BC (Wk13999), and are also marked by the appearance of a number of the most distinctive Middle Banesh vessel forms, including the bevelled-rim bowl, various goblet types and spouted vessels, and these also appear together with red-slipped ware vessels akin to those seen at Tol-e Spid[8]. The phases at Tol-e Nurabad are however notable for the absence of a number of forms that are regarded as being typical of the Banesh assemblage.

With the exception of one residual sherd from Trench B, Tol-e Nurabad has produced no examples of the Banesh low-sided trays, which are typical of Susa II-III levels at Susa and the Middle Banesh levels at Tal-e Malyan. Regional variation in ceramic assemblages cannot be used to explain this absence, as low-sided trays are common in Phase 18 at Tol-e Spid. Similarly, chaff-tempered goblet rims are rare in the Tol-e Nurabad Trench A deposits and goblet bases were not found at all, even though they are present at Tol-e Spid, and are very common at Tal-e Malyan (Nicholas 1990: Pl. 13.m-s, v-bb; Sumner 2003: Figs. 21-22), and at Banesh sites surveyed in the Kur River Basin (e.g. Alden 1979: Fig. 31). Furthermore, the carinated bowl which has been described as "the most common grit-tempered form" at

Tal-e Malyan (Sumner 2003: 48, Fig. 24.a-h, t-z) appears to be completely absent from both Tol-e Nurabad Trench A and Tol-e Spid[9], although a possible example was recovered during the survey (MSP 1795). Also absent from the assemblages at both Tol-e Nurabad and Tol-e Spid, although perhaps less surprisingly, are lugged storage jars, both with and without incised decoration on the shoulder[10]. The variation between the ceramic assemblages of the two sites in Mamasani, and between the sites in Mamasani and those in the Kur River Basin, may be reflective of a combination of differences in the function of the deposits that have been investigated and a degree of regional variability in Banesh period ceramic assemblages in Fars. However, there remains the possibility that there are sampling biases that stem from the excavation of very small soundings at Tol-e Nurabad and Tol-e Spid.

Analysis of Banesh period ceramic production and distribution in the Kur River Basin has shown that distinct systems producing vessels made from vegetal and grit-tempered clay fabrics were operating simultaneously (Alden 1979; Blackman 1981, 1989). Alden's analysis of metric variation has shown that sites producing specific vegetal-tempered and grit-tempered vessel forms existed in both the Early and Middle Banesh periods (Alden 1979: 93-114). Through a combination of thin-section petrographic, X-ray diffraction and neutron activation analyses, Blackman has demonstrated that the vegetal-tempered vessels were manufactured from an alluvial clay that is widely available in the Kur River Basin, and agreed with Alden's suggestion that they were produced at several sites on the plain that appear to have specialised in the production of certain forms (Blackman 1981: 16-17; after Alden 1979: 102-114; also Sumner 1986b: 200). Blackman also suggested that some vegetal-tempered forms may have been produced at Tal-e Malyan itself (Blackman 1981: 16-17). Blackman's analysis of the grit-tempered ware vessels showed that they were produced from at least two compositionally distinct sources of raw materials, and may have been produced at more than one locale on the talus slopes at the northern edge of the plain (Blackman 1981: 17-19; also Alden 1979: 93-102)[11]. Both Blackman and Alden's analyses attest to the operation of specific production and distribution processes in the Middle Banesh period where specific wares were used to produce specific vessel forms at particular locales, and this material was then being distributed to Tal-e Malyan and other sites. This gives clear insight into one aspect of the complex economic system that accompanied the appearance of urbanism in the Kur River Basin.

Preliminary analysis of 4th millennium BC ceramic material from sites in Mamasani has shown that there are clear compositional differences between samples from bevelled-rim bowls and samples from other Banesh vessel forms, and that vessels displaying similar compositions have been found at both Tol-e Nurabad and Tol-e Spid (Petrie et. al. in preparation). This suggests that a complex production and distribution system similar to that in evidence in the Kur River Basin was also active in Mamasani in the late 4th millennium BC.

Nevertheless, it is the continued appearance of red-slipped wares that is perhaps the most interesting factor about the Banesh period ceramic assemblages from Tol-e Spid Phase 18 and the Tol-e Nurabad Phases A9-A7. At Tal-e Kureh, Alden noted that the proportion of Lapui fine ware drops from 32% to 1% between the Initial and Early Banesh phases (Lot 9 - Stratum IIIe to Lot 3 - Stratum Ib), and then to 0% in the Early Banesh Phase (Lot 2 – Stratum Ia, Alden 2003a: Table D1, 188, 196-197). Fine red-slipped ware was also not recovered in the excavations of Middle Banesh levels at Tal-e Malyan, although some Lapui red wares were collected from the surface of the site (Sumner 2003: Table 12). Given this notable shift in the use of fine red-slipped wares in the Kur River Basin, it is particularly notable that a number of vessel forms that appear in red-slipped ware at Tol-e Spid Phase 18 and the Tol-e Nurabad Phases A9-A7 only appear in vegetal- and vegetal and grit-tempered ware in the Kur River Basin (e.g. Chapter 4.7.2)[12]. This suggests that during the Banesh period in Mamasani, ceramic forms that were potentially developed in the Kur River Basin were incorporated into the pre-existing local repertoire, and produced using a ware that had been made locally for several centuries. The other marked contrast between relatively poorly finished mass-produced vegetal and grit-tempered ware forms that dominate the Banesh period assemblages in the Kur River Basin, and the Banesh period red-slipped ware vessels from Mamasani is that the latter are almost universally finely made and well finished. The combination of ceramic wares and forms revealed at Tol-e Nurabad Phases A9-A7 and Tol-e Spid Phase 18 has not previously been observed in Fars, and the variability in the wares and forms that were being produced emphasises that a regionally distinctive and complex system of ceramic production was in operation in Mamasani during this period[13].

The further investigation of the late 4th millennium BC phases at Tol-e Nurabad and Tol-e Spid has the potential to profoundly enhance our understanding of the processes of cultural contact and change that were operating in southwest Iran during this period. In particular, it will provide insight into the nature of the economic systems that were in operation in regional areas coincident with the appearance of urbanism and the Susa III/Proto Elamite horizon (see below).

7.1.5. Mamasani in the 3rd Millennium BC

It is not precisely clear what transpires in Mamasani at the end of the 4th millennium BC, but in stark contrast to the preceding three millennia, there is a substantial lack of evidence for settled occupation in the region for much of the 3rd millennium BC. Following the Banesh period occupation at Tol-e Spid (Phase 18), the site appears to have been abandoned by the end of the 4th millennium BC, and does not appear to have been reoccupied until the very late 3rd, or more probably the early 2nd millennium BC (see below; also Chapter 4.7.2; Petrie et al. 2005: 66). It is possible that the initial abandonment was related to an earthquake, as there is evidence for subsidence visible in the sounding, but the reason for the protracted desertion of the site is not clear. The Middle Banesh phases at Tol-e Nurabad (Phases A9-A7) also seem to date to the late 4th millennium BC, but in contrast to the evidence from Tol-e Spid, it appears that Tol-e Nurabad was occupied at least for part of the early 3rd millennium BC. A number of sherds recovered from Phase A6 have forms and/or decoration similar to Late Banesh material from Tal-e Malyan (see Chapter 3.8.2), and the radiocarbon date from this phase (OZI135 - c.2900-2600 BC) correlates with the one reliable Late Banesh radiocarbon determination from Operation By8 at Tal-e Malyan (c.3090-2620 BC - after Sumner 2003: Table 13; see Chapter 3.7). Unfortunately, no similar material has yet been recovered from any of the sites investigated in the Mamasani Survey, so it is not clear whether early 3rd millennium BC occupation was widespread in Mamasani (see Figure 7.1).

Following the Late Banesh occupation at Tol-e Nurabad, it appears that at least the area of the site exposed in the Trench A sounding was also abandoned and left unoccupied until the early or mid-2nd millennium BC. This protracted span of up to 800 years is seemingly confirmed by the radiocarbon determinations from Phases A5-A3 (see below; also Chapter 3.7). The precise duration of the hiatus in occupation at Tol-e Spid after Phase 18 is not so clear. There are three phases of occupation that can be attributed to the Kaftari period (Phases 17-15), but as noted in Chapter 4.6, there is some inconsistency in the radiocarbon dates. One of the two dates from Phase 17 suggests that there is a possibility that Tol-e Spid was reoccupied from around 2140 BC. However, this determination is inconsistent with a younger date from an earlier deposit within the same phase, which falls entirely in the 2nd millennium BC, and suggests that the site might have remained abandoned until the Middle Kaftari period (see below).

Late Banesh and Kaftari Origins

The Late Banesh period in the Kur River Basin is only known through limited excavations in Operations TUV, By8, the H5 sounding, and the recently excavated YBR Trench at Tal-e Malyan (e.g. Sumner 1985; Nicholas 1990; Miller and Sumner 2004; Alden et al. 2005: 43; also Abdi 2001), as well as material collected from a small number of sites identified in Alden's directed survey (Alden 1978). The lack of widespread exposure of Late Banesh deposits makes it difficult to both define the composition of the entire cultural assemblage of the period, and to give a clear context for the construction of the wall around 200 ha of Tal-e Malyan, which is dated to the Late Banesh period (Sumner 1985).

Previously it has been claimed that there was a disruption in settlement in the Kur River Basin at the end of the Late Banesh period resulting in widespread abandonment of sites between 2800/2600-2200 BC, and it was suggested that Tal-e Malyan might have been abandoned during this period (Sumner 1988a: 315-317; Sumner 1989: 135-136). However, a reassessment of the H5 sounding in Operation GHI at Tal-e Malyan has shown that there is some evidence for continuity between the Late Banesh and Early Kaftari periods on this part of the site (Sumner 2003: 54-55; Miller and Sumner 2004)[14]. Sumner has claimed that the so-called "fully articulated Kaftari style" does not appear until c.2200-1900 BC, but concedes that the origins of the Kaftari assemblage lie earlier than 2200 BC (Sumner 2003: 54-55; Miller and Sumner 2004: 17)[15].

Although both Tol-e Nurabad and Tol-e Spid present protracted sequences of occupation, as yet, no evidence for a Late Banesh-Kaftari transition has been discovered at either site. A total of nine Kaftari period sites have been recorded in Mamasani, Mostly in the Dasht-e Rostam-e Do, and a number of these (MS8, MS12, MS14 and possibly MS47) show occupation in the preceding Banesh period. Given that MS8 and MS14 in particular are preserved to heights of 6-7 and 10-15 m respectively, then there is a possibility that one of these sites might reveal evidence for continued occupation during the 3rd millennium BC. There is also the large site of Tappeh Sorna (MS1), which at a height of 24 m rivals Tol-e Nurabad, and appears to have been occupied in all but the Neolithic and Banesh periods on the basis of material collected from the surface. Only excavation will demonstrate whether or not it too was occupied in the 3rd millennium BC.

7.1.6. Mamasani in the 2nd millennium BC

The distinctive brown painted ceramics that characterise Phases 17-15 at Tol-e Spid and Phases A5-A3 at Tol-e Nurabad have clear parallels with Kaftari period ceramic material from the Kur River Basin. As noted above, the "fully articulated Kaftari style" first appears in deposits at Tal-e Malyan dated c.2200 BC and continues to be present up to c.1600 BC (Sumner 1989: Table 4; Potts 1999: 151-152; Petrie et al. 2005: 53-61, Table 3, Figs. 6-7). This roughly corresponds to the reigns of the historically attested Shimashki and Sukkalmah dynasties and the related occupation at Susa (Stolper 1984a: 20-32; Carter, E. 1984: 146-154; Potts 1999: 130-187)[16] (see Chapter 1.4). However, although we have a reasonably clear idea of when the Kaftari ceramic assemblage was in use, we have little idea of the nature of the internal development of that assemblage over that 600 year span (see Petrie et al. 2005: 53-55)[17]. It has been possible to establish a relative sequence of Early, Middle and Late ceramic forms using the material from Tal-e Malyan presented in Nickerson's PhD thesis, but the most distinctive Kaftari period material comes from Late Kaftari strata (c.1800-1600 BC) (see Petrie et al. 2005: Figs. 3-5; after Nickerson 1983). The presence of three metres of archaeological deposit that could clearly be divided into three phases of Kaftari period occupation at Tol-e Spid, and a further two and a half metres of similar deposit comprising three phases at Tol-e Nurabad therefore seemed to provide an ideal opportunity to clarify the nature of internal development within the Kaftari period.

The ceramic material from Tol-e Spid Phases 17 and 16 in particular has good relative parallels with the Middle and especially Late Kaftari material from Tal-e Malyan (see Chapter 4.7.2; also Petrie et al. 2005: 62), but the lack of information about internal development in the Kaftari period means that a relative correlation is not straightforward, and absolute correlations will be much more reliable. However, as noted above, there is some stratigraphic inconsistency with the four determinations from the Kaftari period radiocarbon determinations from Tol-e Spid. Taken together, the three dates from Phases 17, 16 and 15 suggest that Tol-e Spid might have been occupied from as early as 2140 and up to 1600 BC. The chronologically earliest date from Phase 17 (Wk13983 - c.2140-1880 BC) correlates well with the dates for the Early and Middle Kaftari strata at Tal-e Malyan (see Petrie et al. 2005: Fig. 11). However, this sample is stratigraphically later than another date from the same phase (OZI141 - c.1770-1510 BC), which correlates well with the Late Kaftari dates from Tal-e Malyan (see Petrie et al. 2005: Fig. 11). To make matters more confusing, the probability range of this stratigraphically earliest Kaftari date from Tol-e Spid (OZI141 - c.1770-1510 BC) makes it the earliest of the four dates from Phases 17-15 (see Chapter 4.6; Petrie et al. 2005: 66). As such, it is not clear which of the two Phase 17 determinations is the more reliable, and it is also not clear how Phase 17 relates to the Tal-e Malyan sequence. As such, it is not clear whether Tol-e Spid was reoccupied in the late 3rd millennium BC, or remained abandoned until the early-mid 2nd millennium BC (see Figure 7.1).

The ceramic material from Phase 16 at Tol-e Spid also has good parallels with the Middle and Late Kaftari material from Tal-e Malyan, but it is the material from Phase 15 that is the most interesting, as it appears to have some parallels with both the Kaftari and Qaleh period material known from Tal-e Malyan and also with some Shogha and Teimuran material from Darvazeh Tepe (see Chapter 4.7.2). However, some of the motifs are not known from the Kur River Basin, and this suggests that there is potentially a degree of regional variation in the decorative styles during this Late Kaftari period in Fars, and that there is some chronological development in the assemblage. What transpires at Tol-e Spid after Phase 15 is not clear, but it is possible that the site was again abandoned until at least the late 2nd millennium BC, when there is somewhat obscure evidence attesting to occupation during the Middle Elamite period (see below).

There is also good evidence for Kaftari period occupation at Tol-e Nurabad (Phases A5-A3), and there is no chronological confusion with regards to the absolute dates that have been analysed. The earliest Kaftari period date from Phase A5 (OZI136 - 1740-1490 BC) suggests that Tol-e Nurabad was not reoccupied until the Late Kaftari period, and this is seemingly confirmed by the dates from Phases A4 and A3, which are stratigraphically and chronologically consistent (see Chapter 3.7). In fact the three dates from Phases A5-A3 are statistically the same, suggesting that these three phases represent occupation over a relatively short period. The ceramic material from these phases broadly correlates with the material from Tol-e Spid Phases 17-15 and has good parallels with Late Kaftari material from Tal-e Malyan. The absolute date (OZI138 - c.1610-1410 BC) and the ceramic material from Tol-e Nurabad Phase A2b suggest that this phase dates to the Late Kaftari or Early Qaleh period, which correlates well with the material and the absolute date from Phase 15 at Tol-e Spid. In fact, some of the ceramic forms and motifs seen in the Tol-e Nurabad Phase A2b-a assemblage are not otherwise attested in Fars, which reinforced the suggestions that there was potentially regional variation and chronological development in the mid-2nd millennium BC ceramic assemblages of Fars.

One of the most significant discoveries in the Phase A5-A3 deposits at Tol-e Nurabad was the presence of an abundance of “wall cone” fragments (see Chapter 3.5). Although the Tol-e Nurabad wall cones clearly come from deposits dated to the early-mid 2nd millennium BC, the best archaeological parallels for these objects come from late 3rd millennium BC Susa. Loose parallels with Mesopotamian architectural traditions suggest that such items may have been typically used to decorate large religious or civic buildings. None of these wall cones was found in a primary context, so their function remains uncertain, and while their recovery out of context is not in itself significant, their presence does suggest that a large and undoubtedly significant structure dating to the 2nd millennium BC lays buried within Tol-e Nurabad, waiting to be revealed.

The faunal assemblages from the Kaftari period deposits at Tol-e Spid and Tol-e Nurabad are broadly akin to those of the earlier phases of occupation at both sites. At Tol-e Nurabad caprids dominate the assemblage (by NISP), with a low proportion of bovids and other domestic or hunted meat producing species almost absent, with the exception of land turtles (see Table 5.2b, Figure 5.14a-b). At Tol-e Spid the pattern is similar, although the proportion of bovids is slightly higher (see Table 5.4b, Figure 5.14a-b).

Unfortunately, it has not been possible to discern what took place at Tol-e Nurabad in the period between Phase A2a and Phase B9. Trench B was excavated to the same absolute depth as the top of Trench A, and unfortunately there does not appear to be a chronological overlap between the soundings. As such, it is not yet possible to establish whether there was a stratigraphic break between the Late Kaftari/Qaleh period occupation in Phase A2 and the clear evidence for Middle Elamite occupation in Phase B9. It is therefore not clear whether there was a hiatus in occupation at the site in the mid-late 2nd millennium BC (see below).

Our knowledge about Kaftari period occupation in Mamasani other than at Tol-e Nurabad and Tol-e Spid is relatively limited. During the Mamasani survey, only 9 Kaftari period sites were identified, and appear to indicate a shift away from occupation in Dasht-e Rostam-e Do (see Chapter 6.3.1). It is during this period that the Kurangun relief is believed to have been carved, so it is highly likely that Mamasani was a significant component of the highland domains of the sukkalmahs.

As has been outlined in Chapter 2.1.4 (also Petrie et al. 2005: 52; Asgari et al. in press), Mamasani is located at a strategic point in the southern Zagros, where the route from Susa to Anshan converges with the route from the Elamite seaport of Liyan and Rishahr at Bushehr. This, combined with the presence of the clear evidence for at least Late Kaftari occupation at both Tol-e Nurabad and Tol-e Spid, together with the indication of occupation at a further 9 sites in the region, and the presence of the Kurangun relief has been used to support the suggestion that Mamasani is a candidate for the location of the region of Huhnur, the Key or the Bolt to the Land of Anshan (Petrie et al. 2005: 75, n.53). However, the recent publication of an inscribed stone has confirmed that Huhnur was the site of Tepe Bormi, near Ram Hormuz (Nasrabadi 2005). This doesn't however preclude the possibility that Mamasani might well be one of the as yet unlocated provinces of Elam.

Kaftari to Qaleh/Middle Elamite Transition

Precisely what transpires at the end of the Kaftari period in the Kur River Basin remains to be clearly established (Carter, E. 1984: 172-173; Sumner 1988a: 316). As Carter has pointed out:

> "The gaps in both the archaeological and historical record make the period between the end of the Sukkalmah Dynasty and the rise of the Middle Elamite kings in the thirteenth and twelfth centuries poorly known" (Carter, E. 1984: 156).

Following the widespread and relatively well dated evidence for the occupation of Tal-e Malyan during the Kaftari period, we have a lack of dated contexts for the Early Qaleh period occupation revealed in Operations GHI, ABC, XX, and Test Trench F (Sumner 1988a: 316). The late 2nd millennium BC occupation at Tal-e Malyan is however well known, thanks to the discovery of the Middle Elamite building in Operation EDD, which has been dated to c.1350-1100 BC (Sumner 1988a: 316; Carter, E. 1996: 173; also Carter, E. and Stolper 1976). Other deposits that appear to be contemporary with this structure were revealed in Operation BB33 and Test Trench D (Sumner 1988a: 316). With the exception of the material from Tal-e Malyan, there is no other known Middle Elamite material from excavations or surface collections in the Kur River Basin, or anywhere else in Fars until the excavations at Tol-e Nurabad and Tol-e Spid, and the Mamasani Survey.

As noted above, there is a possible break in occupation at Tol-e Nurabad between the Late Kaftari and the Middle Elamite periods, but this may well be the result of the lack of stratigraphic overlap between the Trench A and Trench B soundings. The lowest level reached in Trench B (Phase B9) was characterised by the remains of a substantial mudbrick structure and collapse produced by its destruction (see Chapter 3.2.4). Although the associated cultural material was limited, the ceramics that were present suggest that this phase should be attributed to the Middle Elamite period (see Chapter 3.8.2). These deposits were overlain by layers of mudbrick collapse (Phase B8), which probably date to the Middle Elamite or even Neo-Elamite period. Unfortunately, no radiocarbon determinations are yet available for Tol-e Nurabad Trench B. The presence of a phase above Phases B9-B8 that appears to contain distinctively Neo-Elamite ceramic material (Phase B7b-B7a), suggests the possibility of continuous occupation at Tol-e Nurabad from the late 2nd into the early 1st millennium BC (see below). If this is in fact the case, then Tol-e Nurabad is the first site in Fars to produce clear evidence for continuous occupation throughout this period, which is only otherwise attested at Susa (Miroschedji 1981a).

One of the most unexpected results of the excavation of the sounding at Tol-e Spid was that there was no unequivocal evidence for substantial occupation at the site during the Middle Elamite period at the end of the 2nd millennium BC. This came as somewhat of a surprise, considering that the only piece of information about the site that we had prior to excavation was that an inscribed brick had been discovered at the site, suggesting that a temple had been built there by the Middle Elamite king Shilhak Inshushinak (see Chapter 1.2, Chapter 4.1). However, Tol-e Spid Phase 14 is particularly interesting, as it appears to have been a thick layer of intentionally deposited clay and degraded mudbrick fill, which did not contain any clearly defined occupation deposits, but which contained the highest number of ceramic fragments of any phase revealed in the sounding. This included a mix of black-on-buff Bakun, red-slipped Lapui, vegetal-tempered Banesh, and vegetal and grit-tempered Kaftari and Middle Elamite ceramic wares and forms. The mixed nature of the ceramic material suggests that the clay for the deposit was excavated from areas of the site where earlier deposits were present. As the latest ceramic material is Middle Elamite, it is entirely possible that this phase represents an intentional filling episode that occurred during the late 2nd millennium BC. However, it is also possible that Phase 14 post dates the Middle Elamite period, and this would indicate that it must date to some point between the late 2nd millennium BC and the beginning of the Achaemenid occupation in the mid-1st millennium BC that is attested in Phase 12. As yet, there are no radiocarbon determinations for Phase 14 to provide any clarity, and the mixed nature of the ceramic assemblage indicates that any datable material may well be residual. The resolution of the significance of the Phase 14 filling episode remains as one of the primary aims of any expanded excavations at Tol-e Spid. Phase 13, which overlies the Phase 14 fill, is comprised of fill and pits, but also contained a mix of ceramic material similar to that found in Phase 14. There are also no radiocarbon determinations for Phase 13, so it has not been possible to either confirm or deny whether there are any preserved remains of the temple built at Tol-e Spid by Shilhak Inshushinak.

Caprids continue to dominate the faunal assemblages at Tol-e Nurabad and Tol-e Spid during the Elamite periods, comprising over 90% of NISP. Bovids were present in small proportions and other taxa were very rare (see Tables 5.3b, 5.4b, Figures 5.14a-b).

During the Mamasani Survey, evidence for Elamite period occupation was recovered from the surface of 14 sites, many of which appear also to have been occupied during the Kaftari period. It has been assumed that most of these sites were occupied in the late 2nd millennium BC, although in some instances, some forms could be interpreted as being either Middle or Neo-Elamite (see below, also Chapter 6.3.1). The sites with clear Middle Elamite occupation include Tappeh Sorna, the largest site in the Dasht-e Rostam-e Do, and what might be a single period occupation at a substantial site in the central part of that plain (MS24). When the evidence from the Mamasani Survey is combined with the remains of the substantial mudbrick structure exposed in Tol-e Nurabad Trench B (Phase B9), and the possibility that there was a major Elamite temple at Tol-e Spid, it is clear that the significance of Mamasani during the Kaftari/Sukkalmah period continues into the so-called Middle Elamite period.

7.1.7. Mamasani in the 1st Millennium BC

There are a number of fundamental problems with our understanding of the archaeology of the 1st millennium BC in Fars, which is partly due to the fact that no single stratified sequence or interlocking series of sequences have yet been excavated that cover the entire 1st millennium BC. As such, we have no real understanding of the nature of the transition from the Middle Elamite to the Neo-Elamite phases in Fars, if in fact there was such a transition, we also have no information about the period between c.900 and 600 BC[18], no clear impression of precisely what took place in the lead up to Achaemenid rule, and little idea of what happens after the end of Achaemenid control other than the evidence from the Tall-i Takht at Pasargadae.

At present, it is not precisely clear whether the work of the Mamasani Archaeological Project has alleviated this situation. The ceramic material from Tol-e Nurabad Phases B7b-7a has parallels with Neo-Elamite material from Susa, and if this material is in fact Neo-Elamite it is of immense significance, as there is no clearly Neo-Elamite occupation attested in the Kur River Basin, and the easternmost Neo-Elamite ceramic material had previously been identified at Tepe Bormi, Tal-e Ghazir and several other sites on the Ram Hormuz Plain (Carter, E. 1994: 68-72, Figs. 4-13; also Wright and Carter, E. 2003). However, at present, the ceramic material is relatively limited and there are no absolute dates from these levels, and the suggestion that Phases B7b and 7a are Neo-Elamite in date is being presented with caution. Overlying these is Phase B6, which is marked by the presence of both Neo-Elamite and Achaemenid forms. It is not clear whether this is indicative of a transition between the two periods, or whether the Neo-Elamite material is residual. Above Phase B6 are a series of phases of Achaemenid (Phases B5b-B4) and Post-Achaemenid (Phases B3-B1) occupation, which suggest that Tol-e Nurabad was occupied until the end of the 1st millennium BC. The discovery of what might potentially be a sequence of occupation that covers the transition between the Neo-Elamite and early Achaemenid periods has immense significance in terms of our understanding of the archaeology of the early 1st millennium BC in Fars, and particularly that of the processes that were taking place in the region in the lead up to the rise of the Achaemenids (see below).

There were no clear indications of Neo-Elamite occupation from the sounding at Tol-e Spid. However, as mentioned above, it has not yet been possible to place Phases 14 and 13 into a precise chronological framework, so it is possible that one or other of these phases dates to the Neo-Elamite period. This suggestion is potentially reinforced by the recovery of what appear to be Neo-Elamite vessel fragments in Phases 13 and 12. In contrast to this clouded picture, it is very clear that Tol-e Spid has a well stratified sequence of Achaemenid and Post-Achaemenid occupation, which spans the period from the 5th to the 1st centuries BC (Phases 12-3 - see Chapter 4.7.1-4.7.2; also Figure 7.1).

In general, the proportions of faunal taxa in the Achaemenid and Post-Achaemenid levels at Tol-e Nurabad and Tol-e Spid are similar to those of earlier phases. However, equids (including both donkey and onager/horse) and significant numbers of suids (including young individuals from domestic populations) are present in various Achaemenid and Post-Achaemenid phases at Tol-e Spid (see Table 5.4b, Figure 5.14a-b).

Several sherds that might be attributed to the Neo-Elamite period were also recovered from the Mamasani Survey, indicating that a significant number of sites might have continued to be occupied during the early 1st millennium BC (see below; also Chapter 6.3.1). The Mamasani Survey also provided evidence for continued occupation into the later 1st millennium BC, with evidence for both Achaemenid and Post-Achaemenid settlements and structures. Perhaps the most significant is the discovery of the Achaemenid structure at Tappeh Pahnu, which along with Tappeh Servan represent the archaeological “footprint” of the Achaemenid administration of Mamasani (see below; also Chapter 6.3.1; Asgari et al. in press).

Neo-Elamite/Achaemenid/Post Achaemenid Transitions

The discovery of possible Neo-Elamite occupation at Tol-e Nurabad, Tol-e Spid and several other sites in Mamasani, and correlates well with the suggestion that the Kurangun relief may have been modified in this period (see Chapter 1.4). Further excavations into the upper levels at Tol-e Nurabad and Tol-e Spid accompanied by a programme of radiocarbon dating will be the only way of providing clear evidence of whether either site was occupied during the critical period between c.900-600 BC.

Our knowledge of the Achaemenid period primarily comes from the investigation of monumental architecture at Pasargadae, Persepolis and Susa. Furthermore, the profusion of monumental architecture dating to the Achaemenid period in the Kur River Basin has led to there being little focus on the Achaemenid or Late Plain Ware ceramic material[19]. The excavated collections of

Plain Ware all come from either Late Achaemenid or Post-Achaemenid deposits (i.e. the 4th and 3rd centuries BC or later), and some of these lack good stratigraphic context (e.g. Sumner 1986a: 3-4)[20]. It has not yet been clearly established when this Late Plain Ware first appeared, but it marks a complete break with the painted traditions that were in use up until at least 900 BC (Boucharlat 2003: 262). Sumner has claimed that the first appearance of this Late Plain Ware can be dated to the 6th century BC (Sumner 1986a: 4), and this has been tempered by Boucharlat who has suggested that its appearance should either be dated to the reign of Cyrus II or more likely Darius I (Boucharlat 2003: 263).

The possibility that there is evidence for a transition between the Neo-Elamite and Achaemenid periods at Tol-e Nurabad (Phase B6), and then continued occupation in the Achaemenid (Phases B5b/5a-B4) and Post Achaemenid periods (Phase B3-B1) means that there may be an ideal opportunity for assessing when the transition to the Achaemenid ceramic assemblage took place in this part of Fars and how this assemblage developed. However, as noted above, there are no radiocarbon dates yet available from these levels, so it is not precisely clear when each phase dates. This is also confounded by the fact that the area exposed was relatively limited and only produced a small ceramic assemblage for each phase.

The uppermost phases at Tol-e Spid do little to resolve the situation. As noted above, the date of Phases 14 and 13 remains ambiguous, and while it seems likely that Phase 14 dates to the Middle Elamite period, it is not clear whether Phase 13 dates to the later 2nd or to the early 1st millennium BC (see Chapter 4.3.2). In contrast, Phase 12 has been unequivocally dated to the Achaemenid period through relative ceramic parallels and absolute dates (Wk13985 - c. 550-350 BC – Chapter 4.7.1-4.7.2). Taken as a group, all of the radiocarbon dates from the upper phases at Tol-e Spid are highly significant as they indicate that Phases 12 and 11 potentially present the earliest well dated Achaemenid/Late Plain Ware assemblage yet identified in Fars, and they also indicate that there was more or less continuous occupation at the site from the early Achaemenid to the Post Achaemenid periods. Boucharlat has also pointed out that although the arrival of Alexander and the collapse of Achaemenid control effectively mark the beginning of a new historical horizon, this results in little change to the ceramic styles, and much of the Late Plain Ware assemblage continues being used into the Post-Achaemenid Seleucid and Parthian periods (Boucharlat 2003: 262). This seems to be confirmed by the excavations at Tol-e Spid as the ceramic assemblages from Phases 12-3 are fairly consistent, and apart from a few exceptional pieces, the vessels appear to be local variants of Achaemenid and late Achaemenid forms. The four radiocarbon determinations that provide a clear chronology for these phases make this one of the best sequences of Achaemenid occupation in Fars. The damage that has been done to Tol-e Spid in recent years prevents us from establishing precisely when the site was abandoned. However, the fact that the latest excavated deposits appear to date to the Post-Achaemenid period (300-50 BC) and that there is a site less than 1km to the east (MS 36 - Tol-e Kushkak), which might have Sasanian period occupation suggests that Tol-e Spid may have been abandoned before the Sasanian period (see Figure 7.1).

Achaemenid and Post-Achaemenid sites were found fairly evenly spread through both Dasht-e Rostam-e Yek and Do (see Chapter 6.3.1), including occupation at sites such as Tappeh Sorna (MS1), which appears to have been the most significant site in Dasht-e Rostam-e Do. In addition to these settlement sites, there are a number of significant structures that attest to the region's importance during these periods. The distinctive structures at Tappeh Servan (Jinjan) and Tappeh Pahnu, and also a third similar structure that has been reported at Tal-e Gach Garan-e Khodada, 5 km from Tol-e Nurabad, are critically important for our understanding of the Achaemenid administration of this region, and of the Royal road between Susa and Persepolis (see Hallock 1969; 1978). Various scholars have argued that there are Royal way-stations and/or storehouses on this route, and suggestions have been made about how far such structures are likely to be apart (Koch 1986; 1990; Tuplin 1998: 63-114; Aperghis 1998: 35-62, 1999: 152-193). There has been considerable discussion of the routes through the southern Zagros, and particularly of the location of the so-called Persian Gates (e.g. Stein 1940; Herzfeld 1968: §146; Hansman 1972: 118; Bosworth 1980: 324-329; MacDermott and Schippman 1999: 294; Speck 2002), but the remains of these two structures are some of the clearest evidence for the route of the Royal road. Lying 17-18 km apart, they lie within the estimated range of one days travel on this route, and that they also correlate with the proposed distance between stations and storehouses (Asgari et al. in press; after Koch 1986: 133-147, 1990; Aperghis 1999: 152-193; Tuplin 1998: 106).

There has been very little investigation of archaeological sites in Fars that were occupied late in the 1st millennium BC, which is the period of Elymais, the frataraka dynasty and rise of Parthian control in Iran. The rock cut tomb of Dau-o Dokhtar, which has been dated somewhere between the late 5th and 3rd centuries BC (see Chapter 1.2; Stronach 1978: 304; also see Gall 1993), is clearly modelled on the Royal Achaemenid tombs at Naqsh-i Rustam, and indicates that Mamasani was significant enough during the Achaemenid and Post Achaemenid period to warrant the burial of a high status individual high on a cliff overlooking the northern end of Dasht-e Rostam-e Do[21]. The proposed date for the tomb suggests that it was carved while Tol-e Spid was occupied. The Achaemenid and Post Achaemenid ceramic assemblages from the upper phases at Tol-e Spid provide a perspective on what appears to be village occupation in a period, which is only otherwise known from major sites such as Pasargadae, Qasr-i Abu-Nasr, Bard-i Neshandeh, Masjid-i Sulaiman and Susa (see Chapter 1.4). This is further enhanced by the material from Phases B3-B1 at Tol-e Nurabad, which also date to the Post-Achaemenid period. There should be little doubt that further excavations at Tol-e Nurabad and Tol-e Spid, will make it possible to greatly enhance our knowledge of the critical developments of the 1st millennium BC.

7.1.8. Mamasani AD

The rise of the Sasanian Dynasty in highland Fars is one of the most significant events in Iranian history. While there is an abundance of evidence for Sasanian occupation in Mamasani, particularly the city of Nobandagan, the tower of Dum-e Mil, the relief at Sarab-e Bahram (see Chapter 1.3), and the 23 sites discovered during the Mamasani Survey (see Chapter 6.3.1), no Sasanian period occupation has yet been discovered in a stratigraphic context at either Tol-e Nurabad or Tol-e Spid. Unfortunately the uppermost deposits at both sites have been damaged, and in both cases, it is not possible to establish whether either was occupied in the Sasanian period. The protracted sequence of occupation at Tol-e Nurabad suggests that it might have been the most significant site on the Dasht-e Nurabad for several millennia. The foundation of Nobandagan within 3 km of Tol-e Nurabad may explain why there is no clear evidence for Sasanian period occupation at the site, as its place as the most significant site on the plain had been usurped. The protracted sequence of occupation at Tol-e Spid similarly suggests that it might have been the most significant site on the Dasht-e Rostam-e Yek for several millennia. No preserved deposits dating to either the Sasanian or the Islamic period were identified in excavations, but possible Sasanian and Islamic material was collected from the surface. Although it is not certain that it was occupied during the Sasanian period either, the substantial site of Tappeh Kushkak (MS 36) lies less than 1km to the east of Tol-e Spid, is preserved to a height of 10 m, and has significant evidence for Islamic period occupation. It may have taken over Tol-e Spid’s role in the Sasanian and Islamic periods.

The presence of Nobandagan and the significant Sasanian period remains discovered by the Mamasani Survey indicate that this region was an important part of the Sasanian cultural landscape in Fars. The strategic importance that Mamasani had in the prehistoric periods is certain to have continued into the Sasanian period as well, as it was now surrounded by some of the most important Sasanian sites and monuments, including Bishapur, Firuzabad, Istakhr and Naqsh-i Rustam.

As with the Sasanian period, no Islamic period occupation has yet been identified in the excavations in Mamasani. However, virtually every site visited during the Mamasani Survey displayed evidence for some Islamic period occupation. Thus far, the surface collections have not been separated into Early, Middle and Late Islamic material, so it is not yet possible to discuss socio-economic or political dynamics that may have been operating in Mamasani during this period Although it was not surveyed, historical evidence suggests that Nobandagan was also occupied during the Islamic period, and it was almost certainly a major regional centre at this time. The Islamic period archaeology of Mamasani deserves to be intensively studied, and will undoubtedly make a significant contribution to our understanding of the Early, Middle and Later Islamic periods in Iran.

7.2. Future Directions – The Mamasani Archaeological Project Stage Two

With the completion of the initial stage of work, it is clear that continued field research in Mamasani will enable us to address issues and investigate processes of transformation that are intrinsic to our chosen region of study, in particular its location on the main route between the two areas that were the major population and political centres of southwestern Iran throughout prehistory. Further research will also facilitate the investigation of broader research questions that are of interest and relevance to many geographical regions of Iran and to Western Asia as a whole. Some of the most significant transformations that fall within the scope of research in Mamasani include the introduction and development of Neolithic food producing economies in the highland Zagros and beyond; the rise of nomadic pastoralism as a subsistence regime; the growth of complex ranked and stratified societies, which led to the development and spread of administrative technologies, the expansion and intensification of exchange systems, early urbanism and state formation; and the rise of multi-regional, ethnically-diverse empires. In the following discussion, a number of these questions and issues will be reviewed, and the role that Mamasani might have in their investigation will be addressed.

The appearance of Neolithic communities in Fars

There has been a great deal of debate regarding the mechanisms by which agriculture spread from its origins in the early Holocene Levantine Corridor to encompass most of the Old World by the middle Holocene. Explanations have focussed on both early agricultural population diasporas (e.g. Renfrew 1987, 1996; Cavalli-Sforza 1996; Bellwood 2001) and alternative mechanisms by which agricultural technology might have spread without migration (e.g. Price and Gebauer 1995; Zvelebil 1996). The simplistic nature of this theoretical dichotomy has been pointed out by numerous scholars (e.g. Halstead 1996: 299; Meadow 1996: 393), and it is certain that in most cases the development of agricultural communities within a specific region was a complex process that, as noted by Bernbeck et al. (2004), was not necessarily unidirectional in terms of increasing reliance on agriculture. Intertwined with such considerations are attempts to assess the role played by climate in the origins and expansion of agriculture (e.g. Bar-Yosef and Meadow 1995; Hole 1996; Byrd 2005), and the ways in which feedback between agricultural subsistence regimes

and existing social structures operated to affect life in Neolithic communities.
Most research into the Neolithic period in Western Asia has focussed on the origins of agriculture rather than its spread, and this is particularly the case for its spread eastwards. As outlined below, it is hoped that future archaeological and palaeo-environmental fieldwork in Mamasani will be able to shed light on the eastward spread of farming into the Zagros and further a field across the Iranian Plateau to Central and South Asia. Moreover, the extended archaeological record attested at sites such as Tol-e Nurabad should allow us important insight into the ways in which Neolithic agricultural and pastoral practices developed over the course of the millennia of occupation in Mamasani.

Fars Province lies outside but immediately adjacent to areas where the early primary domestication of animals such as sheep and goats took place, perhaps as early as the 9th millennium BC, and where domesticated cereals were exploited by the 8th millennium BC (Smith 1976; van Zeist et al. 1984; Zeder and Hesse 2000). Nevertheless, although parts of Fars have been intensively surveyed since the 1950s (e.g. Vanden Berghe 1954; Sumner 1972; Miroschedji 1972) and hundreds of sites have been recorded, we know surprisingly little of the earliest settled communities of this agriculturally-rich region. This is partly a reflection of the research agendas of the archaeological expeditions working on the region: the excavations carried out by William Sumner and his collaborators in the 1960s and 1970s focussed predominantly upon the early state-level entities of the Banesh, Kaftari and Middle Elamite periods (e.g. Nickerson 1983; Nicholas 1990; Carter, E. 1996; Sumner 2003); while more recent research has focussed upon the development of complexity in the late Chalcolithic societies immediately antecedent to early states (e.g. Alizadeh 2003b; 2006).

Prior to 2003, only four Neolithic sites in Fars had been excavated: Tall-i Mushki, Tall-i Jari A and B, and Tall-i Bakun B (Egami and Masuda 1962; Egami 1967; Fukai et al. 1973; Egami et al. 1977; Maeda 1986; Nishiaki and Mashkour 2006). Of these four, only the site of Tall-i Mushki has material remains dating to the earliest phase of the pottery Neolithic period in Fars (see Chapter 1.4). Excavations at these sites were conducted prior to the development of modern techniques for the recovery and analysis of botanical and faunal remains, and with little attention to the study of prehistoric subsistence practices. As a result, there is limited evidence for the types of domesticated and wild plant and animal species that were exploited by these communities, and this has meant that the agricultural nature of these settlements must be surmised from the presence of secondary processing tools such as grinding stones and flint sickle blades, chaff-tempered pottery, and collections of animal bones that remain incompletely studied, but which are said to include those of sheep/goat and type of large ungulate (Hole 1987a: 54). Even the sedentary nature of the settlements has not been established with certainty, and it has been suggested that Mushki period settlements may have been impermanent campsites (Hole 1987a: 54). Only in the last two years has research at early agricultural settlements in highland Fars been renewed by the collaborative ICAR/University of Sydney project in Mamasani, by the Iranian/American excavations at Toll-e Bashi in the Kur River Basin (Abdi et al. 2003; Bernbeck et al. 2004), and by the re-excavation of important Neolithic sites in the Kur River Basin by Alizadeh (2004). Already these projects have provided critical information for an understanding of the timing of the earliest farming in the region, and it is now clear that the beginning of the Mushki period must date to the later 7th millennium BC, sometime before c.6100 BC. Analyses of faunal assemblages from Fars province currently being undertaken my Mashkour will undoubtedly revolutionise our understanding of early animal exploitation in the region.

What remains to be investigated, however, are the many questions related to the nature of the transition to agriculture in Fars. In the basic formulation of the issue outlined above, one is left to wonder whether agriculture was introduced to Fars by new groups of people, or whether the ideas, technology, and/or crops were borrowed from neighbouring agriculturalists by a local hunter-gatherer population. The broad issue of “indigenous” versus “exogenous” origins is a useful starting point for the debate, encompassing as it does most of the (few) existing hypotheses for the agricultural origins in Fars[22] (see Harris and Gosden 1996).

It has generally been argued that the earliest known farming communities in Fars, those of the Mushki period, represent a colonisation of the region by agricultural groups. The primary factor supporting a Neolithic colonisation of Fars is the observation that, although the Kur River Basin is one of the most intensively surveyed areas of southwest Iran, there is as yet no conclusive evidence for occupation in the region from the end of the Epipalaeolithic period to the appearance of pottery-using Neolithic communities in the Mushki period. In support of a long occupational hiatus are the broad typological comparisons that can be drawn between the lithic material from known Epipalaeolithic sites in the Kur River Basin, such as Eshkaft-i Gavi, and Zarzian period sites in neighbouring regions of the Zagros (Solecki and Solecki 1983; Smith 1986; Rafifar 2000; Rosenberg 2003). These Zarzian sites are thought to have been abandoned by the end of the Holocene (Hole 1996: 268). In fact, it has been suggested that for the Zagros in general there may be a significant chronological gap between the latest Zarzian occupation and the earliest Neolithic settlements, representing a period of abandonment of higher elevations due to climatic deterioration (Hole 1996: 264; see Chapter 2.1.2-2.1.3). Obviously, if Fars was entirely depopulated in the early Holocene, then colonisation of the region by Neolithic groups is the only hypothesis regarding agricultural origins that can be sustained. The nature and details of the colonisation process would nevertheless need to be established.

Ceramic typologies and chronological data have been used to further buttress the case for a Neolithic colonisation of Fars. Specifically, the study of ceramic assemblages indicates the wide geographical spread of Mushki and Mushki-related pottery in Fars, which stands in contrast to the distinct regionalism seen in later Neolithic ceramic assemblages from the area (Stein 1936: Pl. XXIII.93, 95; Miroschedji 1972; Sumner 1977). This pattern has been interpreted as reflecting an initial rapid (low density) colonisation of the region, which spread a uniform Mushki-related material culture over wide areas of Fars, followed by a period in which there was a decrease in the level of interaction between the different regions of Fars, which led to the development of differentiated regional ceramic styles (Sumner 1977: 302-303; 1988a: 316). Various population source areas and colonisation routes have been proposed for the arrival of people using Mushki pottery in the Kur River Basin, including colonisation from one of the lesser investigated valleys of Fars itself (Sumner 1977: 302-303), or from neighbouring north-westerly areas of the Zagros which show some ceramic parallels with Mushki period pottery (e.g. Meldgaard et al. 1963; Bernbeck 1989) and which were already home to established agricultural communities.

The early Holocene depopulation of the Kur River Basin has however, not yet been unequivocally established. As outlined above, post-Zarzian to pre-Mushki sites have not yet been recorded in any part of Fars, but it must also be noted that very few Epipalaeolithic sites have been excavated anywhere in western Iran, and none have been dated radiometrically. The great problem of typologically dating such assemblages is that they continued to be used over protracted periods, and their chronological contemporaneity is typically assumed rather than demonstrated. As a result the potential existence of long-lived, remnant hunter-gatherer communities in particular regions can be obscured. It is not inconceivable, given the lack of evidence for the date of Epipalaeolithic sites in Fars, that the region may have been continuously occupied from the Late Pleistocene onwards by hunter-gatherer communities (c.f. Smith 1986), which may have made use of the abundant caves scattered throughout the limestone ridges that make up the Zagros range and delimit all of the known alluvial plains in the region.

Furthermore, any early Holocene depopulation need not have characterised all regions of Fars. Significantly, post-Zarzian "proto-Neolithic" and aceramic Neolithic occupation sites in caves and rock-shelters are known to exist in western Iran at altitudes below 800 metres (Hole 1996; Rafifar 2000). The Mamasani District, at elevations of c.800-1000 m, lies at the upper limit of the zone regarded as habitable at this time and the existence of hunter-gatherer groups in the region down to the time of the well-known Mushki period occupation is possible.

Uncertainty regarding the pre-Mushki settlement of Mamasani in particular, and Fars generally, leaves open the possibility that agriculture was not introduced into the highlands through colonisation, but was adopted by an existing hunter-gatherer population through a process of "secondary" or "cultural" diffusion (c.f. Harris 1996: 7). Certainly, the adoption of agriculture is a theoretically plausible hypothesis based upon trends seen in a world-wide overview of transitions to agriculture. Price and Gebauer (1995: 8), for example, have noted that "with only a few exceptions, the general pattern for the transition to agriculture is one in which local peoples adopt the ideas and products of cultivation and herding". Mashkour has noted (see Chapter 5) the apparently "Mesolithic" nature of the subsistence practices evident at Tall-i Mushki, which might theoretically represent one aspect of such an adoption.

If such is the case, the possible roles of local hunter-gatherer groups in the rise of agricultural subsistence in Mamasani must be considered. The breadth of possible interactions is very large, incorporating a variety of events and processes ranging from the adoption of individual components of agricultural technology from settlements in neighbouring regions, through to various forms of cooperative or antagonistic social and economic interaction with newly established farming communities (c.f. Hole 1987a: 33). As there is very little information regarding the chronology, settlement systems, or subsistence practices of the Epipalaeolithic and earliest Neolithic populations of Mamasani, and no indisputable point of origin for hypothesised groups of colonising farmers, the question of the rise of an agricultural way of life in this part of Fars is very much open.

Regardless of whether agriculture was adopted or introduced through colonisation, one must wonder at the apparent lateness of Neolithic sedentary settlement in Fars. Aceramic Neolithic sites in lowland Khuzestan, such as Ali Kosh and Chogha Bonut, date as early as the mid-to-late 8th millennium BC (Hole et al. 1969; Hole 2000, 1994b; Zeder and Hesse 2000; Alizadeh 2003b). Contemporary and earlier aceramic Neolithic settlement sites are also known from higher elevations in the central Zagros. Examples include Tepe Guran, which at 950 m asl is at almost exactly the same elevation as Tol-e Nurabad, as well as Ganj Dareh, at the much higher altitude of 1400 m asl (Smith 1990: 323; Hole 2000; Zeder and Hesse 2000) and Tepe Abdul Hosein at 1860 m asl (Pullar 1990: 1). The role of climate and vegetation in the spread of agriculture in Iran has been emphasised by some scholars (e.g. Hole 1996; 1998), in particular the role of climate in governing the spread of oak-pistachio forest (and associated cereals) south through the Zagros mountain chain (see Chapter 2.1.2-2.1.3). Whilst such arguments are important in understanding the earliest aceramic Neolithic occupation at sites like Tepe Abdul Hosein and Ganj Dareh, one might wonder whether the presence of natural cereal stands in highland areas was important for possible groups of colonizing farmers who already possessed a developed and established farming "package" of domesticated cereals and animals, as might well characterise early agricultural groups in Fars. Given the apparent timing of the first Neolithic settlements in Fars in the late 7th millennium BC, other climatic events and processes, especially the now widely known 8200 cal BP climatic deterioration event (e.g. Alley et al. 1997; Rossignol-Strick 1999: 526; Wick et al. 2003: 673; Byrd

2005; see Chapter 2.1.2-2.1.3), might also be considered as important.

There are a number of approaches that might be used to bring some resolution to this situation. In general, there is a lack of detailed palaeo-climatic and palaeo-vegetational data for the Zagros, so we have no clear baseline for the environmental context that existed in southwestern Iran, particularly in Mamasani. The pollen cores that have been studied are from two lakes in the Central and Northern Zagros, so in the first instance, it is imperative that the nature of vegetational variation at different altitudes and latitudes during the late Pleistocene and early to middle Holocene is established. This can be achieved through an analytical programme that combines palynological, plant macrofossil and oxygen isotopic analyses, which will enable the reconstruction of Late Pleistocene and Holocene climatic and vegetational profiles (e.g. Leng 2003; Wasylikowa 2005; Emery-Barbier and Thiébault 2005).

Although there are an abundance of caves visible in many areas of Fars, relatively few of these have been examined in detail, and fewer have been excavated (e.g. Rosenberg 1985, 2003; Tsuneki and Zeidi. in preparation; also see Chapter 6.3.1). During the survey of Dasht-e Rostam-e Yek and Do, only three caves were visited, but many more were seen in the ridges above both plains, and others were also visible in the ridges surrounding the Dasht-e Nurabad. A comprehensive survey of all visible cave sites in Mamasani, complemented by a series of test excavations at the most promising, would provide a means of assessing the nature of occupation in the region from the Late Pleistocene through to the Early and Middle Holocene.

The presence of deeply stratified Neolithic occupation sites such as Tol-e Nurabad and Tappeh Molla Shamshiri (MS20), and clear evidence for Neolithic occupation at a number of other sites (Tappeh Jovi Khanimeh – MS10, Tappeh Zurband – MS11, possibly Tol-e Spid – MS51), presents an ideal opportunity for establishing the absolute date for the earliest Neolithic occupation in the region, and for collecting protracted sequences of associated cultural material – particularly palaeo-botanical and palaeo-zoological remains. This can be achieved through the targeted excavation of soundings at MS10, 11 and 20, and open area excavations at Tol-e Nurabad, accompanied by a systematic programme of sampling and analysis.

The coordinated use of a range of such approaches is imperative for any future programmes directed towards the reconstruction of Late Pleistocene and Holocene climatic and vegetational profiles in the Zagros, and the investigation of the nature of human occupation of the Mamasani region during this period. It is only through the establishment of a clear baseline of climatic and vegetational evidence that it will be possible to contextualise the results obtained from excavations; and it is only through the examination of Upper Palaeolithic and Neolithic occupation at cave and settlement sites that it will be possible to establish the degree of constraint that climate and vegetation placed upon the process of Neolithisation in highland Fars.

Pre-state complexity and the rise of mobile pastoralism in Fars

In highland Fars, the Bakun period occupation has major implications for our comprehension of developments in socio-economic complexity that took place during the later 5th millennium BC, particularly the development of mobile pastoralism and its role in the development of proto-state organisation (Alizadeh 2003b; 2006). In the following section we review some of the evidence for the 5th millennium BC occupation of Fars, focussing particularly on the competing models of social development and subsistence regimes that have been put forward to explain the archaeological record of Bakun and Lapui period settlement in the Kur River Basin. Firstly, however, a brief introduction to the archaeological investigation of early pastoralism in southwest Iran is presented, in order to put these arguments into their wider theoretical context.

Whilst the steps that took place in the rise of pastoralism in Fars are poorly understood, there has been much more intense debate on the rise of nomadic pastoralism in the central and south central Zagros (Hole 1996; Zagarell 1982; Abdi 2003a). The archaeological evidence from western Iran discussed within this debate provides two critical insights into the issue: firstly, that the development of pastoralism as a subsistence strategy was a protracted process; and secondly, that this process took place at different times in different areas.

Hole has argued that the foundation of Ganj Dareh (c.8000 BC – Zeder and Hesse 2000: 2256, Table 1) represents one of the first movements of livestock under the control of humans into the upland pastures of the Zagros, which were created after the Younger Dryas, when the shifts in climate led to the re-vegetation of the highlands (Hole 1996: 276-277; also Chapter 2.1.2-2.1.3)[23]. These actions by 'agriculturalist-herders', which could be seen as an attempt to ensure access to regular meat supplies and to maintain that supply (Hole 1996: 277), seem to be closest to the definition of transhumant pastoralism recently been outlined by Abdi (2003a: 395-405). However, this does suggest that Aceramic Neolithic herders were moving herds between summer and winter pastures, and living in settlements in each locale, which does not correlate with some aspects of the definition[24].

Evidence for what appears to be transhumant pastoralists living in campsites has however been discovered at the 7th millennium BC site of Tepe Tūlā'ī at the north end of the Susiana plain (Hole 1974, 2004: 78-81; Pires-Ferraira 1977; Bernbeck 1992). Hole initially proposed that this site was used by herders who were fully detached from sedentary people, who migrated seasonally into the Zagros (Hole 1974: 236-237), whereas Pires-Ferreira drew on her analysis of the faunal remains to conclude that the users of the site kept village based fallow herds (Pires-Ferreira 1977: 279), and would also have engaged in agriculture (Bernbeck 1992: 77). Although Hole later partially modified his view (Hole 1979), Bernbeck has argued that the two interpretations are irreconcilable, and proposed that the faunal and ceramic remains at Tepe Tūlā'ī indicate that the inhabitants were transhumant pastoralists who engaged in east-west or 'horizontal' migration along the Zagros foothills (Bernbeck 1992: 84-86).

If the evidence from Ganj Dareh and Tepe Tūlā'ī does in fact represent the activities of transhumant herders/pastoralists, then these scenarios seem to exist outside of the usual typological models that are invoked for explaining the development of pastoralism in the Zagros during the Chalcolithic (see Bernbeck 1992: 83; Abdi 2003a: 395-405). For example, Abdi's detailed examination of the progressive shift to nomadic pastoralism on the Islamabad Plain in the Central Zagros envisages several stages in this process, beginning with village-based herding, then transhumant pastoralism, and semi-nomadic pastoralism, before full-fledged nomadic pastoralism is adopted, and in each case, pastoralists move between higher and lower altitudes (Abdi 2003a: 395-405). This also correlates with the evidence from the Parchinah and Hakalan cemeteries (Haerinck and Overlaet 1996), which provide a critical *terminus ante quem* (c.4200-4000 BC) for the existence of what appears to be fully-fledged nomadic pastoralist behaviour in the central Zagros.

While the evidence from Tepe Tūlā'ī and Ganj Dareh does not fit neatly into such a typology, Abdi's analysis of the Islamabad Plain evidence highlights that there are circumstances when regions in western Iran did follow this trajectory. Drawing heavily on survey evidence, Abdi argues that the shift away from village based herding began in the Early Middle Chalcolithic, when temporary campsites begin appearing in pasture areas outside the agricultural zone (Abdi 2003a: 421-422), and gradually during the Late Middle and Late Chalcolithic settled occupation decreases dramatically, temporary campsites predominate, and the distance between sedentary villages and campsites increases (Abdi 2003a: 423-425). This ultimately leads to the creation of a distinct nomadic pastoralist social group (Abdi 2003a: 437-439). This shift is interpreted as reflecting a decline in the agricultural regime of the Islamabad region, similar to that which occurred in the Kur River Basin (see below; after Sumner 1988b, 1990b, 1994), but interestingly, Abdi emphasises that the pattern observed on the Islamabad Plain is not identical to that seen in the Kangavar Valley, which lies less than 100 km to the east and maintains a village-based agricultural economy, presumably because the region has a cooler and drier climate, and thus a lower agricultural production that is less open to overexploitation (Abdi 2003a: 432, 436; also Levine and McDonald 1977). Although Abdi's research importantly emphasises that there are several stages in the shift towards nomadic pastoralism that can be identified archaeologically, it also highlights that the transformation to nomadic pastoralism did not happen simultaneously throughout the highlands of western Iran, and that factors such as local climate, vegetation, rainfall, and water resources must have all played a critical role in these processes.

Returning to the evidence from Fars proper, the various surveys that have been conducted in the Kur River Basin have located a total of 175 sites where plain and decorated Bakun buff wares were found on the surface (Sumner 1990b: Table 2; 1994b: Table 1)[25]. This is the largest number of sites for any of the prehistoric periods and prompted Sumner to describe the Bakun period as the culmination of the first cycle of population growth in the Kur River Basin (e.g. Sumner 1994b). Most of these sites are less than 2 ha in size, but there is evidence for three particularly large Bakun period sites (Sumner 1994b: Table 2; also Kole 1980)[26], suggesting that there was some degree of settlement hierarchy in the region during this period (see Sumner 1994b: Fig. 6). While the Bakun period as a whole spans most of the 5th millennium BC, the excavations that have thus far been carried out indicate that it is unlikely that many of the Bakun period sites were occupied throughout this period (see Chapter 1.4). Although these excavated Bakun occupations can be divided into Early, Middle and Late phases, no definitive attempt has yet been made to sub-divide the Bakun sites identified through survey on the basis of the chronological variation in the material recovered (see Sumner 1994b: 49; also Alizadeh 2006). Sumner's attempt to identify settlement distributions for sub-phases or stages using the presence or absence of material relating to the preceding and/or the succeeding periods[27], led him to suggest that there was a progressive increase in the number of sites and the settled area in the Kur River Basin from the Early Shamsabad (47 sites, 39 ha), to Early (73 sites, 65 ha) and Middle Bakun (85 sites, 99 ha) stages, and a subsequent lessening of both during the Late Bakun stage (65 sites, 61 ha) (Sumner 1994b: Sumner 1994b: 49ff., Table 3; see Chapter 1.4)[28]. Drawing on these figures, Sumner has proposed that the Bakun period in the Kur River Basin is characterised by a steady growth in population up to and including the Middle Bakun period, accompanied by settlement fission rather than nucleation, and increases in inter-regional interaction, scales of social interaction, productive specialisation and administrative control (Sumner 1994b: 58, 62). He envisages that this was largely a product of intensified field crop production and animal husbandry, which is primarily based on the increase in the numbers of sites, a reduction in the mean distance between sites, and their location in areas suitable for agriculture or pasturage (Sumner 1994b: 52, 59; also 1990b: 99-100)[29]. Intensified agricultural production, possibly in conjunction with reduced fallow, may potentially have resulted in decreased productivity and a reduction of settlement in the Late Bakun (Sumner 1990b: 99-100; 1994b: 58). However, this reduction of settlement is contemporaneous with the evidence for specialised ceramic production and the use of seals[30] revealed by the excavation of the Late Bakun phase deposits at Tall-i Bakun A (see Langsdorff and McCown 1942; Alizadeh 1988; 1994; 2004; 2006; 2009). Sumner has combined this evidence for productive specialisation and increased administrative control with indications of population growth, inter-regional integration and an increased scale of socio-economic integration to propose that during the Bakun period, political organisation consisted of hierarchically ranked kinship units that competed for power within the system (Sumner 1994b: 60-62).

Although Sumner has acknowledged that others have argued that pastoral nomadism was established in the Bakun period (Alizadeh 1988; 2003b; 2006; 2009; see below), he has suggested that the transition to a pastoral mode of production was a product of the collapse of the first great cycle of population growth in the Middle-Late Bakun, which led to a shift away from field crops to sheep and goat herding in the Lapui period (Sumner 1986b: 199; 1988b: 33-39; 1990b: 102-103). This was seen as a response to the rapidly decreasing productivity of parts of the Kur River Basin, which is interpreted as being a direct result of salinization and other products of agricultural intensification (Sumner 1990b: 102-103). This decline in settlement numbers in the Late Bakun and Early Lapui stages coincides with a greater dispersal of settlement and a shift in the location of sites, away from districts suitable for irrigated field crops to so-called peripheral districts, well endowed with natural pastures, and this has been taken to indicate a shift towards a reliance on extensive pastoral production (Sumner 1988b: 38). The continuity of this trend during the subsequent Middle Lapui stage is taken to indicate that an extensive subsistence production system based on a combination of sheep and goat pastoralism and small scale ground water irrigation or extensively dry farmed crops had developed (Sumner 1988b: 39). Sumner has suggested that this is the final stage of sedentary life from which a major segment of the populations gradually converted to pastoral nomadism (Sumner 1988b: 39). The complete shift to pastoral nomadism is purportedly documented in the Banesh/Lapui and Banesh stages (see below; after Sumner 1988b: 39-41), which also see the appearance of urban Tal-e Malyan. As such, highland urbanism is seen as a direct product of villagers obtaining protection from tribal leaders, who initially settled in village headquarters, one of which ultimately evolved into Tal-e Malyan (Sumner 1986b: 207-209). Sumner's views on this process appear to have changed somewhat (Sumner 2003: 113-117), and he now sees this 'small city inhabited by craftsmen', where surplus products were being distributed by the nomadic pastoralist population (who could have acted as middlemen) for consumption or trade (Sumner 2003: 116). Although such models are compelling, they still rely heavily on hypothetical changes in subsistence practices, which remain to be demonstrated through the analysis of well stratified botanical and faunal remains from Bakun, Lapui and Early Banesh habitation contexts. We also have little idea of the nature of interaction between sedentary and mobile populations during the Banesh period as a whole.

In marked contrast to Sumner's reconstruction of the rise of nomadic pastoralism, Alizadeh (2003b: 89; 2006) has argued that the transition took place much earlier, claiming that the industrial and administrative activities at Tall-i Bakun A were not supported by subsistence agriculture[31], but rather by a pastoral mode of production (Alizadeh 1988; 1994; 2003b: 88-90; 2006). Extrapolating from this supposition, he has argued that Tall-i Bakun A provides evidence for the existence of complex pre-state formations based on mobile-pastoralism in highland Iran during the 5th millennium BC (Alizadeh 1988; 1994; 2003b: 88-90; 2006; 2009).

It is inviting to envisage that mobile pastoralism is capable of achieving a level of state organisation through economic diversity. Alizadeh's interpretation of social organisation and subsistence during the Late Bakun period draws on evidence for the existence of seasonal occupation at campsites, an evident absence of evidence for irrigation agriculture and settlement hierarchy, the presence of administrative technology at the relatively small type site, the widespread distribution of ceramics with similar forms and motifs in southwest Iran, and the ethnographic evidence of the land-use and migratory practices of the Qashqa'i nomads (Alizadeh 2003b: 89-90; 2006; 2009). However, this interpretation does have a number of potential problems (see Frazer 2008; Asgari et al. 2008)[32].

Although some of the Bakun period mounds and possible campsites may have been occupied seasonally (see Alizadeh 2003b: 88-90; also Stein 1936: 161, 163, 175, 180), none of these have yet been excavated scientifically. As such, it is not clear what role these campsites played in the Bakun period subsistence regime. Furthermore, the existence of such sites in no way precludes the exploitation of agricultural subsistence strategies, nor does it indicate the wholesale adoption of pastoralism, but may in fact represent the use of both approaches simultaneously. In fact, it is highly likely that fully pastoral societies interacted symbiotically with agricultural communities. The claim that there is a lack of settlement hierarchy in the Late Bakun period ignores the fact that there are three particularly large sites that have Bakun material on the surface (see above, also Sumner 1994b: Figs. 2-4). Although excavations have begun at one of these mounds, the Bakun levels at each of these remain unexcavated, so we have no idea of what socio-economic or political activities might have been going on at these sites (see above). While there should be no doubt that the evidence for administrative technology at Tall-i Bakun suggests the existence of complex administrative practices, it is one of only two excavated sites that have Late Bakun occupation, so it is not clear whether Tall-i Bakun A was even one of the most important sites in the region (Frazer 2008). Given that there are three significantly larger sites that have Bakun period occupation, it may in fact be a site of secondary importance. Although it appears that the general similarities among the ceramics of southwestern Iran indicate that the Late Bakun and contemporaneous Late Susiana periods display increasing contact between highland Fars and Khuzestan (Alizadeh 1992: 25, 57, 59-61; 2003a: 4; also Delougaz and Kantor 1996: 304), no detailed analysis of the frequency and distribution of decorative motifs has yet been undertaken. Lastly, although it is tempting to see the similarity between the distribution of Bakun-type ceramic material and the regions exploited by the Qashqa'i as evidence for the use of similar subsistence regimes, these two examples are separated by in excess of 5000 years, so any suggestion that similar practices were in operation must be considered as speculative (Frazer 2008).

When the arguments of Sumner and Alizadeh are taken into consideration, it is clear that there are a number of critical questions about the 5th-4th millennia BC in Fars in general, and about the rise of nomadic pastoralism in Fars in particular that remain unanswered. We do not have a clear idea of the distribution and organisation of settlement during the Early, Middle and Late Bakun phases; we do not yet know whether the Lapui period should be subdivided into sub-phases; we do not have clear impression of the subsistence regimes that were in use during the 5th and most of the 4th millennium BC derived from the analysis of floral and faunal remains; and perhaps most critically, we have little idea of what was transpiring at the largest Bakun period sites or any of the Lapui period sites in the Kur River Basin at this time.

In order to gain an understanding of the processes of social and economic development that were taking place, during the 5th and 4th millennia BC in the Kur River Basin and in Fars as a whole, and also of the subsistence strategies that were supporting them, it is critically important that new research is undertaken to resolve a number of basic questions.

a) The existing Bakun period survey data must be re-evaluated so that it is possible to attribute individual sites to specific phases within the period (c.f. Sumner 1994b: 63), and to establish whether the current interpretations of the Bakun period settlement dynamics can be maintained.
b) New excavations must be carried out at sites that have Early, Middle and/or Late Bakun phases of occupation, and also at Lapui and Early Banesh sites that have a significant depth of deposit, with the specific aim of obtaining radiometric dates and recovering floral and faunal remains that will provide clear evidence for the type of subsistence regimes being practiced. The excavation of Lapui sites will also make it possible to establish whether there is any internal development within the Lapui cultural assemblage and associated subsistence practices.
c) There must be excavation of campsites that date to the Bakun, Lapui and Banesh periods so that it is possible to establish how the behaviour of the inhabitants of such sites related to the inhabitants of more substantial sedimentary sites.
d) The programme of reconstructing the climatic and vegetational profiles for the southern Zagros outlined above should be extended to include the 5th and 4th millennium BC, as this will provide a critical environmental context for the socio-economic developments that took place during that period.

While in many ways, it is most critical that such research is undertaken at sites in the Kur River Basin, further excavations at both Tol-e Nurabad and Tol-e Spid will undoubtedly contribute to significant new perspectives on the developments that took place in the 5th-4th millennium BC. As noted above, it is highly likely that environmental factors will have played a critical role in the location and timing of the shift to nomadic pastoralism. Mamasani lies in the temperate motadel zone and has been an important region on the major route between the low and highland plains for millennia (see Chapter 2.1.4, 2.2.3). As such it will provide critical perspectives to our understanding of the history of pastoralism in the intermontane valleys of Fars, and particularly on the distribution of decorative motifs into the region between the lowlands and highlands. Mamasani is also likely to add a perspective to our understanding of the transition to nomadic pastoralism that will be different to that revealed in the Kur River Basin, which lies in the higher and cooler sardsir zone.

The deposits exposed in Tol-e Nurabad Trench A in particular suggest that the site is likely to have been occupied during the Early and Middle, and possibly the Late Bakun period, and it is possible that evidence for the transition between the Late Neolithic and the Early Bakun periods will be revealed by excavations elsewhere on the site. Although primary deposits have not yet been exposed that show that Tol-e Spid was also occupied in the Bakun period, the residual material that is present indicates that the occupation may well be protracted. In addition, the presence of other sites in Mamasani dating to the Bakun, Lapui and Banesh periods, means that further excavations and detailed surface surveys in this region, combined with climatic reconstruction will provide key insight into the development of mobile pastoralism in southwest Iran and the processes of socio-economic and political development that took place in this region in the 5th and 4th millennia BC (see below).

The rise of urban complexity in Fars

The growth of Tal-e Malyan during the Middle Banesh period into the first urban site in Iran is rightly considered to be one of the most significant achievements of the prehistoric inhabitants of ancient Fars. While at 45 ha, it may not seem impressive by today's standards of global cities populated by millions, when Tal-e Malyan flourished in the late 4th millennium BC (c.3300-3000 BC), it was four times the size of the ancient site of Susa (11 ha), and by far the largest inhabited centre in Iran at this time. Besides its size, the suggestion that Tal-e Malyan was a true urban site was reinforced by the discovery of monumental architecture, evidence for craft specialisation and trade in finished and unfinished goods, and the evidence for complex administration in the form of the first writing in Iran –the so-called Proto-Elamite or Susa III script (summarised in Sumner 1988a; 2003; also Potts 1999: 52-83; Abdi 2003b). More than anything else, it is the presence of this script that intimately ties urban Tal-e Malyan to the so-called Proto-Elamite phenomenon.

There has been considerable discussion of the fact that tablets bearing the Proto-Elamite or Susa III script have been found at both Tal-e Malyan and Susa in the southwest of Iran, as well as at sites in the west, north, east and southeast, including Tall-i Ghazir, Tappeh Sialk, Tepe Ozbaki, Tepe Yahya, Shahr-i Sokhta (e.g. Alden 1982; Lamberg-Karlovsky 1978, 1996; Damerow and Englund 1989; Potts 1999: 52-83; Butterlin 2003; also

Blackman 1980; Beale and Carter 1983; Majidzadeh 2001)[33]. The distribution of these tablets and a of number of distinctive ceramic forms has prompted energetic debate about what they signify, wavering between the suggestion that Susa (e.g. Lamberg-Karlovsky 1978) or Tal-e Malyan (e.g. Alden 1982: 624) was the pre-eminent, cultural and economic force of the period, and the source of the Proto-Elamite or Susa III writing system (reviewed in Potts 1999: 71, 82-83; Butterlin 2003).

In a seminal paper, Pierre Amiet (1979) identified a dichotomy between the highland and lowland areas of southwest Iran, and suggested that the region was characterised by an 'ethnic duality', where Susa shifts between having cultural affiliations with lowland Mesopotamia, and having close relationships to highland Fars. The early to mid 4th millennium BC is considered to be a period where Susa shares close affinities with Uruk period Mesopotamia, which is potentially a result of the arrival of agricultural colonists (Potts 1999: 65-67), who bring with them a distinctive material assemblage, while the end of the 4th millennium BC is marked by close affinities between Susa and the highlands (Amiet 1979: 196-197). While this model is compelling, it must be pointed out that the Terminal Lapui, Initial Banesh and Early Banesh phases at Tal-e Kureh (Alden 2003a: 196), and Tol-e Spid Phase 19 and Tol-e Nurabad Phases A11-A10 are contemporaneous with Susa II, and are marked by the presence of bevelled-rim bowls (see Chapter 7.1). The appearance of these vessel forms suggests that there was some form of intrusion into the Kur River Basin from outside in the mid-4th millennium BC (Alden 1979; 1982: 620), which took place during the period when Susa is supposed to have had a close cultural affiliation with Mesopotamia. This has significant ramifications for our understanding of long range contacts and influence during the Susa II period (see Algaze 1993; 2001), which in turn has a direct influence on how we understand the developments of the Susa III/Middle Banesh period. How should we explain the rise of the complexity evident at Middle Banesh Tal-e Malyan? Was it the product of endogenous forces developing in Fars, was it a result of a diffused influence from lowland Khuzestan, which had been previously influenced by lowland Mesopotamia, or was it the product of a combination of such factors?[34]

There have been a number of attempts to explain the processes involved in the socio-economic development of Fars in the 4th millennium BC. The two major contributors to the debate have been Alden and Sumner, who have both drawn on a combination of survey and excavated data from the Kur River Basin to present two substantively different interpretations of origins of the Banesh cultural assemblage and the trajectory of the social, economic and political developments that took place during the Banesh period.

As noted above, Sumner has argued that there was a progressive decline in the sedentary population of the Kur River Basin from the Middle Lapui to the Initial/Early Banesh phase, and sees this as the culmination of a decline in sedentary occupation that occurred over a period of 1000 years, which somewhat paradoxically is seen to lead to the growth of urban Tal-e Malyan (Sumner 1986b: 200, 207)[35]. Significantly, Sumner has argued that the population itself did not decline, but ceased to be sedentary and turned to pastoral nomadism, which is ostensibly invisible to the archaeological record (Sumner 1986b: 207). Within this model, the Lapui period is one of major social, economic and political adjustment, and the development of mobile pastoralism as an adaptive response to a sedentary population crash is the primary mover in the development of specialised fully nomadic pastoral production, which in turn sets the scene for the appearance of Proto-Elamite civilisation in Fars (Sumner 1988b: 38, 41; 1994b: 58). This proposed relationship between the rise of nomadic pastoralism and urban complexity hinges on a scenario where the shift to full-time pastoral nomadism during the Early Banesh periods led to conflict between settled farmers and nomads, which in turn led to a situation where villagers obtained protection from tribal leaders, who then settled and attracted craftsmen and markets at their village headquarters, such as Tal-e Qarib (Sumner 1986b: 208-209). The shift from Tal-e Qarib to Tal-e Malyan as the dominant centre is thus envisaged as a shift in tribal leadership, from one lineage to another (Sumner 1986b: 208-209). As a part of this interpretation, Sumner is keen to emphasise that the combination of Tal-e Malyan's size, the growth in craft production, the use of tablets, glyptic and the mobilisation of wealth indicates that Middle Banesh Tal-e Malyan was engaged in 'political and commercial events played out on a larger stage, for greater stakes' (Sumner 2003: 113), and inherent within this formulation is the idea that these developments were endogenous to the Kur River Basin, and occurred concurrently with the more or less contemporaneous events taking place in Susiana (Sumner 1986b: 199-200). Lastly, Sumner also appears to favour the primacy of Tal-e Malyan as the source of the development of the Proto-Elamite/Susa III pictographic script in the late 4th millennium BC, citing the fact that the transition between the Susa II numerical tablets and the Susa III inscribed tablets is not known from stratigraphic contexts at Susa (Sumner 2003: 113), and accepting Amiet's suggestion that Susa was annexed by the highland polity centred at Tal-e Malyan during the Susa III period (Amiet 1992; also 1979, see above).

In partial contrast to this view of highland development, Alden has suggested that the change in ceramic styles from Lapui to Banesh was partially a result of the migration of new peoples into the Kur River Basin (Alden 1982: 620; Blackman 1989: 104). While the excavations at Tall-i Kureh provided good evidence for a transition or development of some vessel forms from the terminal Lapui period into the Initial Banesh period (see Sumner 2003: 51), there should be no doubt that new production technologies and shapes appear, particularly the bevelled-rim bowl, which is attested earlier in Susiana and Mesopotamia. Alden has also argued that the growth of Tal-e Malyan between the Early and Late Middle Banesh sub-phases was not accompanied by a depopulation of the hinterland, and that the apparently dramatic increase in the regional population was the result of substantial immigration into the Kur River Basin from Khuzestan (Alden 1979: 166; 1982: 620; also Lamberg-Karlovsky 1978: 116; 1996: 112-113). This model does not address Sumner's arguments about the role of pastoral nomads, but it does suggest that Middle Banesh Tal-e Malyan was continually exposed to outside influences. Nevertheless, Alden has called the Proto-Elamite/Susa III writing system a highland script, implying that it was first invented on the plateau, and then spread to Susiana, thereby corresponding with Sumner's assertions.

As Potts has argued, these arguments have failed to take into account the evidence of the tablets themselves. Perhaps the most significant factor is the observation that the Susa III/Proto Elamite writing system is derived from the Susa II numerical texts, which have been found at Susa and Tappeh Sialk, but not in excavations at Tall-e Malyan (Potts 1999: 83; also Dyson 1987; Dyson (ed.) 1989; Damerow and Englund 1989; Englund 1998). This seems to argue against an origin for the writing system at Tal-e Malyan. Furthermore, the Susa III texts from Susa record seemingly massive numbers of animals and measures of grain, whereas the numbers recorded at Tal-e Malyan are greater than those attested at Tepe Yahya, but are not of the same order as those at Susa (Potts 1999: 83; after Damerow and Englund 1989: 63, n.71; also Zeder and Blackman 2003). This evidence seems to argue against there being any economic necessity for Susa to have been annexed by the polity at Tal-e Malyan (Potts 1999: 83), although it does little to enlighten us about the nature of the contact between the two centres.

Therefore, we are left with a situation where there are divergent explanations of the origins of the Banesh period cultural assemblage, and there is a lack of consensus about the political centre of the Proto-Elamite phenomenon, if in fact we should actually be looking at it in such a fashion. Also, although there is strong evidence for the origins of the Proto-Elamite/Susa III writing system at Susa, this is not acknowledged by some scholars. In many ways, it will only be possible to resolve these debates through new research focussing on aspects that have not yet been addressed. For instance, it is during the protracted interval from the early to mid 4th millennium BC that the fundamental social, economic and political changes must have taken place in the Kur River Basin in the shift from village life to the appearance of Tal-e Malyan. This 700-800 year period is marked by a number of specific shifts in the material cultural assemblages of Fars (see Chapters 1.4 and Chapter 7.1). Although the shift from the Bakun painted buff ware traditions to the production of Lapui coarse undecorated red ware and fine red-slipped vessels remains ill defined, it marks the important conceptual shift from the use of decorated vessels to the use of plain ware ceramics, and involved changes to the organisation of ceramic production, which continued to evolve during the Banesh period (see above). However, we largely lack substantive data that could provide details about the transitions that were taking place economically, and their social significance. Similarly, there has been a great deal of discussion of developments in subsistence strategies that may have taken place over this period, however, we have little unequivocal data about the nature of the subsistence economy in the Late Bakun, Lapui or Early Banesh periods. As such, the lack of systematic and large scale excavation at sites with occupation dating to the early to mid 4th millennium BC has meant that we do not have an unequivocal impression of the socio-economic or political developments that took place in Fars in the lead up to the foundation of urban Tal-e Malyan.

Prior to the recent excavations at Tol-e Spid and Tol-e Nurabad in Mamasani, there was no excavated material from anywhere in Fars that provided evidence for the social and economic developments that took place during the 700-800 years leading up to the appearance of urban Tal-e Malyan, and there was also no information about the vast area between Susa and Tal-e Malyan. While the soundings at Tol-e Spid and Tol-e Nurabad have provided highly significant insights into this period, it is all too apparent that the exposures at each site are limited to a few square metres. Expanded excavations at both sites focussing on the 4th millennium BC are imperative. Any further excavation at these sites must also be accompanied by a systematic analysis of the floral and faunal assemblages for the entire 4th millennium BC, in light of the fundamental changes that appear to have taken place in the way that people interacted socially and economically.

Furthermore, the ceramic material collected from the surface of Tappeh Mishband and Tol-e Kohneh Zirdu, suggests that both of these sites were occupied during the 4th millennium BC. The surface material from Tappeh Mishband in particular, was almost completely dominated by Lapui phase material, indicating that much of the 4 m of preserved deposit at the site might date to that period, and has the potential to provide unique insight into the processes of development that were taking place in the early-mid 4th millennium BC. In contrast, Tol-e Kohneh Zirdu appears to be a multi-period site, preserved to a height of 10 m, and in addition to Lapui phase material, Banesh phase material was also discovered on the surface, suggesting that the deposits at Tol-e Kohneh Zirdu might be directly complementary to those at Tol-e Spid. Both of these sites present significant opportunities for establishing a regional perspective on the 4th millennium BC, and provide an exceptional opportunity to obtain direct evidence for the socio-economic developments that were taking place along the route between the lowlands and highlands in the lead up to the appearance of the urban Tal-e Malyan.

This focus on the issues of the 4th millennium BC meant that the profound political developments and changes that took place from the later 3rd to the later 2nd millennia BC in southwest Iran have been left aside. The chronological correspondence between the Kaftari period in Fars and the historically attested Shimashki and *sukkalmah* dynasties suggests that this period in particular is likely to have been highly significant for our understanding of the rise of state formations in southwest Iran. It is also during this period that Tal-e Malyan grows to it largest extent. However, our understanding of this period is far from complete, and we particularly lack understanding of the relationship between the City of Anshan (Tal-e Malyan) and the Land of Anshan (Kur River Basin), and of the interaction between these two entities and the surrounding regions of Fars, and beyond those to lowland Khuzestan, Mesopotamia, and the polities of the Persian Gulf (see Petrie et al. 2005). As with the 4th millennium BC, many of these relationships will only become clear through further investigations in critical areas, including Mamasani.

The rise of ethnically diverse empires

The Achaemenid period stands as a high point in Iranian cultural history, where for the first time one massive empire managed to incorporate all of the lands from the shores of the Aegean to the Indus and from Egypt to Central Asia under one ruler, and to maintain that empire for two centuries. However, there are several critical issues about the rise of the Achaemenids that are far from clear, particularly in terms of our understanding of the origins and rise to power of the Achaemenid kings (e.g. Potts 2005a).

Despite an increase in archaeological activity in recent years, there is still virtually nothing known about the archaeology of Fars between c.1000 and 500 BC, which is the critical period for understanding the rise of the Achaemenids. Fars is the homeland of the Persians, but as Potts has pointed out, virtually the only locus at Tal-e Malyan that can be dated to within the first half of the 1st millennium BC is a pit burial with three ceramic vessels (Potts 1999: 285; after Carter, E. 1994). Furthermore, despite the best efforts to argue that some ceramic types might have been in use between c.900 and 550 BC (e.g. Sumner 1994a); there is no securely dated evidence for settled occupation in Fars during this period.

Therefore, it is seemingly of critical importance that the early 1st millennium BC in Fars must be a focus for future research in the region. There are several large sites in the Kur River Basin that are likely to have occupation dating to this period, including Tall-e Shogha and Tall-e Teimuran, and systematic yet targeted excavations at either of these sites are sure to pay handsome dividends. However, it is within a previously under-explored region like Mamasani that true surprises may well be found. The identification of possible Neo-Elamite occupation at Tol-e Nurabad is of immense significance, as it suggests that this site might contain an occupation sequence that has never before been seen in Fars. If Tol-e Nurabad was in fact occupied from the Middle Elamite period in the late 2nd millennium BC up to the Post Achaemenid period in the late 1st millennium BC, it might actually be the most important site in Fars for understanding the transition from Elamite to Persian control in southwest Iran.

As for the Achaemenid period itself, the structures and reliefs at Persepolis and Naqsh-i Rustam are vivid demonstrations of the elaborate art and architecture commissioned by the Achaemenid kings, in particular the iconography of imperial power as it relates to the control of a multi-ethnic state. Furthermore, the Persepolis Fortification and Treasury texts provide unique insights into the nature of the administration and governance of the empire and also of religious practices, particularly in the regions of Fars which have long been recognised as the heartland of ancient Persia (Parsumash/Parsa/Persis; see Potts 1999: 287-288; 2009a). However, in contrast to this seeming abundance of evidence, the archaeology of village or rural settlement under the Achaemenid Kings is virtually unknown. It is sites such as Tol-e Spid that will provide critical perspectives on these aspects, and it is sites like Tappeh Servan and Tappeh Pahnu that will provide crucial insights into the operation of the Achaemenid administration system within the Persian homeland (Potts et al. 2007; 2008).

Afterword

The discussions presented here have focussed on only a small number of the major research issues that relate to the archaeology of Fars, southwest Iran and Iran as a whole. In addition to providing an outline of the work that the Mamasani Archaeology Project would like to focus on in the future, it is also hoped that it will stand as a stimulating review, and that the debates and issues presented here will continue to be addressed by other researchers working in the region.

Notes

[1] For example, Hole notes that there is a cluster of sites in eastern Susiana – Chogha Bonut, Boneh Fazili and Chogha Mish (Hole 1987: 83), which are located between 5- 6 km apart (see Alizadeh 2003a: Fig. 2).

[2] Therefore, the appearance of Mushki ceramics may be the only pottery development in Fars that can be clearly linked with the migration of new people to the region, as the Mushki period represents the earliest post-Pleistocene occupation of Fars (see Chapter 1.4). The highlands of southwestern Iran appear to have been uninhabited between the Epipalaeolithic (Zarzian) and the Mushki period and therefore Mushki settlement with its associated ceramic production could only have been accomplished by migration.

[3] The measurement of the rim sizes of examples of each vessel type recovered from each phase would facilitate the calculation of the co-efficient of variation for the rim diameters of those vessel types, and this would provide a clear indication of whether or not the Lapui vessels in use in any one phase show signs of being the product of standardisation (after Costin 1991; Rice 1991; Blackman et al. 1993).

[4] Badler has recently pointed out that the bevelled-rim bowl is actually a redundant shape when it is introduced into Iranian assemblages, as there are already many local small bowl forms available – suggesting that there is no functional need for this form (Badler 2002: 84). This suggests that the presence of the bevelled-rim bowl in the highland context is likely to be related to a specific purpose, rather than a simple adoption of the lowland vessel form.

[5] In this context, it is interesting to mention that bevelled-rim bowls have also been recovered from the site of Miri Qalat in the Makran region of Pakistani Baluchistan (Besenval 1997).

[6] In terms of trying to establish relative correlations for the transitional material at Tol-e Spid and Tol-e Nurabad, it is notable that there were no fragments of low-sided trays present in either Phase 19 at Tol-e Spid and this form is completely absent at Tol-e Nurabad (see below).

[7] It is interesting to note that while all of the dates from Tal-e Kureh (3 determinations – Sumner 2003: Table 13; Alden 2003a: D3) and the Susa II-III levels at Susa (7 determinations) are presented by Voigt and Dyson (1992: II, Table 2), none of these are included in the wide ranging analysis of the radiocarbon determinations of the Uruk-related assemblages carried out by Wright and Rupley (2001). All three of the dates from Tal-e Kureh have errors in excess of +/- 200 years, giving them protracted probability distributions that make it impossible to correlate them with other dates from the Kur River Basin. The determinations from Susa generally have lower error ranges, but show a great deal of stratigraphic inconsistency, and appear to span the completely unrealistic range of c.4575 to 1945 BC.

[8] In her analysis of contemporaneous material from Arisman and Tappeh Sialk, Helwing has suggested that there are two types of bevelled-rim bowls: a shallow and squat form, which is earlier (Sialk III$_{6-7}$); and a deep and tall form, which is later (Sialk IV$_{1-2}$) (Helwing 2004: 52-53). Previous studies of the bevelled-rim bowls from Operation TUV at Tal-e Malyan (Nicholas 1987), Tepe Yahya and sites in Khuzestan (Beale 1978; Johnston 1973; Dittman 1986) have not drawn attention to chronological differences in the form of bevelled-rim bowls. There do however, appear to be some differences in the morphology of the bevelled-rim bowls from different areas at Susa. Examples from the 4th millennium BC levels in Trench 1038 on the Apadana (Miroschedji 1976: Fig. 3.1-4) and Acropole I Level 18 (Le Brun 1978b: Fig. 32.6), are shallow, while those from Acropole I Level 17 (Le Brun 1972: Fig. 47.8-12) and Level 15 (Le Brun 1972: Fig. 60.12), are all notably deeper. It has usually been argued that Trench 1038 is contemporaneous with Acropole I Levels 22-17 (e.g. Voigt and Dyson 1992: I.132), but if the apparent differences in the bevelled-rim bowls found in Apadana Trench 1038 and those from Acropole I Level 17 are in fact real, then this might indicate that the deposits in Apadana Trench 1038 are earlier than those of Acropole I Level 17. However, it is notable that this does not hold for the bevelled-rim bowls from Ville Royale I Levels 18-17, which are considered to be typically shallow (Carter, E. 1980: Figure 14.1-3). All of the examples that have been recovered from Tol-e Spid and Tol-e Nurabad appear to be of the shallow and squat type (Helwing pers. comm.), but given the lack of clear chronological differentiation in the vessel forms seen in Susiana and the Kur River Basin, it is difficult to establish whether this has any significance. Potentially the pattern observed by Helwing in the Central Plateau is not applicable to the southwest. Potts (2009b) has recently synthesised the data on the geographic distribution of bevel-rim bowls.

[9] See however TS 1838, which is either a goblet or a form of carinated bowl.

[10] The incised lugged storage vessel was common in the Susa II period deposits on the Acropole (I.17, Le Brun 1971: Fig. 51) and the "Proto-Literate" levels at Chogha Mish (Delougaz and Kantor 1996: Pls. 122-123), but they do not appear at Tall-i Ghazir or Tall-i Malyan. However, lugged storage vessels without incision were recovered at Tall-i Ghazir (Whitcomb 1971: Pls. I-IV), and are also considered to be a part of the Middle Banesh ceramic assemblage as it has been defined by Alden (1982: Figs. 45.3, 48.1-9; also Nicholas 1990: Plate 17.f). This suggests that this style of vessel decoration may not reach into southwestern Iran beyond Khuzestan. However, in interpreting the composition of the ceramic assemblage from Tell Abraq period IVC2, Potts (2001: 198-99), has highlighted that there are differences between the Susa II and Susa III cultural assemblages, implying that differences in ceramic assemblages may reflect chronological issues. For example, incised lugged storage vessels are prominent in the Susa II period at Susa itself (Acropole I level 17) and at contemporary highland sites in the Central Zagros (e.g. Godin Tepe Level V), but are absent at Susa in the Susa III period (i.e. Acropole I levels 16-14; Ville Royale 1 Levels 18-16) and in contemporary highland sites in the Southern Zagros such as Tepe Yahya and Tal-e Malyan (and apparently Tol-e Nurabad and Tol-e Spid). Interestingly, as noted in relation to the transition between the Lapui and Banesh periods, the radiocarbon dates for Tol-e Nurabad Phase A10 and Tol-e Spid Phase 19, suggest that these sites were occupied in the third quarter of the 4th millennium BC, which is contemporary with Susa II. At this time one "Western" pottery form, the bevelled-rim bowl was being used at Tal-e Kureh, Tol-e Nurabad and Tol-e Spid, but other contemporary "Western" forms such as the incised storage vessel are absent. The significance of this is difficult to gauge, but may well be related to the types of uses to which each of these vessel types were being put, and the types of practices taking place at the highland sites. However, in each case, only a small area of the site has been excavated, and more may be revealed through expanded exposures.

[11] Although Blackman's work is possibly the most methodologically sound analysis of its type to have been carried out in Iran, he does admit that there are a number of caveats to the conclusions, primarily related to the fact that the samples analysed were collected from only one site (Tal-e Malyan), and it has not therefore been possible to use direct evidence of compositional similarity to argue that specific vessel forms were manufactured as specific sites (Blackman 1981: 17-18). Alden identified five separate sites that appeared to have been involved with the production of grit-tempered ware forms, 3 in

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the Early Banesh and 3 in the Middle Banesh (Alden 1979: 87, 93; also Sumner 1986b: 200, 204).

[12] The evidence for the continued appearance of red-slipped wares in the Banesh period deposits at Tol-e Spid and Tol-e Nurabad is also particularly interesting in terms of the implications that it has for the interpretation of the material from Tal-e Kureh excavated by Alden (2003a). Alden attributed the earliest levels at the site date to a Terminal Lapui phase, but notably, none of the diagnostic red-slipped Lapui red ware forms were recovered from the excavated deposits (Alden 2003a: 195-196). Therefore, Alden tentatively reconstructed the Terminal Lapui assemblage using the red-slipped material collected from the surface of the site, which was distinct from the broader Lapui assemblage identified by Sumner (Alden 2003a: 196). Given the evidence from the Banesh phases at Tol-e Spid and Tol-e Nurabad and the limited excavation of deposits that date before the Middle Banesh period in the Kur River Basin, it is conceivable that the red-slipped vessel forms from the surface of Tal-e Kureh could conceivably have originated from Early Banesh or even Early Middle Banesh levels at the site. These preliminary findings also highlight a potential problem with the interpretation of surface assemblages in the Kur River Basin and in previously unstudied areas of Fars. In all of the surveys conducted in the Kur River Basin, it has been assumed that sites with fine red-slipped ware on the surface date to the Lapui period, while sites with coarse vegetal- or grit-tempered wares date to the Banesh period. The Tol-e Spid sounding shows that both red-slipped ware and coarse vegetal- or grit-tempered wares can appear contemporaneously in Banesh period deposits. As mentioned above, there were relatively few sites with Banesh occupations identified during the Mamasani survey. In opportunistic sampling strategies, undecorated coarse-ware sherds are not typically collected in abundance, so it is entirely possible that some sites that were occupied during the Banesh were not identified. Furthermore, all sites where red-slipped wares were recovered have been attributed to the Lapui period, whereas the excavations have shown that red-slipped wares were in use during both the Lapui and Banesh periods in Mamasani.

[13] Although the appearance of red-slipped wares together with mass produced vessel forms at Tol-e Spid and Tol-e Nurabad is not paralleled at any of the sites investigated in the Kur River Basin, this combination of wares is not unprecedented. Red-slipped wares are also present at Tall-i Ghazir (Step Trench Levels 28-38; Caldwell 1968: 351) and in both the Susa II and III levels of the Acropole (Le Brun 1971: 199, Fig. 45-53, 61.17-20), although in these instances, the vessel forms are different to those seen in Mamasani. Therefore, it appears that the combinations of ceramic wares present in Phase 18 at Tol-e Spid and in Phases A10-A7 at Tol-e Nurabad have never before been observed in Fars, and the combination of vessel forms at the two sites is not in evidence in Khuzestan. To some degree, this suggests that there were cultural processes in operation in Mamasani that are distinct from those taking place in either Khuzestan or the Kur River Basin. It is highly likely that larger exposures at both sites and at Tol-e Spid in particular, will be hugely significant for our understanding of the cultural processes that were in operation between lowland Khuzestan and highland Fars during the late 4th millennium BC, and will give insight into how they affected regional areas like Mamasani.

[14] This does not appear to have been directly confirmed by the recently excavated H1s sounding, which is situated close to H5 and revealed evidence for Banesh period and Early-Middle Kaftari period occupation, but no evidence for occupation during the Late Banesh period (Alden et al. 2005: 42).

[15] The likelihood of pre-2200 BC roots for the Kaftari assemblage in the Kur River Basin is supported by the appearance of painted buff ware with geometric motifs that are stylistically similar to Kaftari motifs in earlier and somewhat contemporaneous level in Khuzestan and elsewhere in the Zagros, as attested by: -

a. Excavations on the Acropole at Susa (Couche 1-4 - Steve and Gasche 1971: Pl. 7, 11-12, 16-18, 21-22),
b. Excavations in the Ville Royale I sounding at Susa (Susa IVA 12-9 - IVB 8-7 - Carter, E. 1980: Fig. 28-29, 35, 39),
c. Excavation of graves at Tepe Jalyan in eastern Fars (Miroschedji 1974: Fig. 5-14), and
d. Excavations at Godin Tepe (Godin III: 5-III: 2 - Henrickson 1986: Figs. 8-17).

[16] The Shimashki period assemblages that are contemporaneous with the "fully articulate Kaftari style" are known from: -

a. Excavations on the Acropole (Troisieme Dynastie D'Ur - Steve and Gasche 1971: Pl. 1-4),
b. Excavations in the Ville Royale I sounding (Susa VA 6-5 - VB 4-3 - Carter, E. 1980: Fig. 38-51),

However, the best parallels for Kaftari vessel forms come from Sukkalmah period forms from Susa (Carter, E. 1979: 122-123), known from: -

c. Excavations of Chantier A and B on the Ville Royale (Shimashki BVII-BVI, Sukkalmah BV and AXV-AXIII - Gasche 1973: e.g. Pl. 3.11, 15.2-3, 20.2, 20.12, 30.3, 32.2, 46.5; Carter, E. 1979; Steve et al. 1980).

See also Petrie et al. 2005 for discussions about the significance of these correlations in terms of the distribution of Kaftari period ceramic vessels within Fars and in the Persian Gulf.

[17] The major research synthesis by Nickerson focussed on variability across the site rather than attempting to detect possible change and development during the Kaftari period (Nickerson 1983: 25). There are inherent problems with using Nickerson's analysis of the material from Tal-e Malyan to provide an impression of development through time in the Kaftari assemblage. All but two of his analytical units were secondary deposits, meaning that there is an imprecise relationship between the objects that were excavated and their depositional context, and there were cases where there is almost certainly a mixing of material (Nickerson 1983: 384-395). Nickerson's reliance on secondary deposits means that it difficult to define the nature of the Kaftari ceramic assemblage at any one point in time at Tal-e Malyan. Nickerson's most important substantive conclusion was that there was a lack of heterogeneity and a degree of homogeneity evidenced among all of the analytical units (Nickerson 1983: 387). The likelihood that this may well be the product of an analysis focusing on secondary contexts does not seem to have been considered. Nickerson (1983: 195) was also unable to detect any significant chronological change in the Kaftari decorative motifs, and appeared to pay little attention to minor morphological variations in vessel forms through time. For a detailed reassessment of the Kaftari period assemblages from Tal-e Malyan see Petrie et al. 2005. The one potential chronological indicator identified by Nickerson was a discernable increase in the proportion of Kaftari buff-ware through time, and a commensurate lessening in the proportion of Kaftari red-slipped ware (Nickerson 1983: 194-198), and this appears to have also been observed in the recently excavated H1s sounding (Alden et al. 2005: 42) (see Chapter 1.4).

[18] As Potts has pointed out, virtually the only locus at Tal-e Malyan that can be dated to within the first half of the 1st millennium BC is a pit burial with three ceramic vessels (Potts 1999: 285; Carter, E. 1994).

[19] Sumner used material found dumped near the Fratadara Temple at Persepolis to define the standard assemblage of Achaemenid or Period VII ceramics for the Kur River Basin (Sumner 1986a: 3, Ill. 1-2). He defined only one ware group, which he initially referred to as Late Plain Ware, and described

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it as a red paste-tempered with black grit and a grey core, and a smooth or occasionally slightly burnished surface, ranging from red to dark grey (Sumner 1972).

[20] The material that is most useful for comparative purposes comes from: -

a. The dump from Hertzfeld's excavation of the Fratadara Temple at Persepolis (Sumner 1986a: Ill.1-2),
b. The excavations in the Treasury and elsewhere on the platform at Persepolis (Schmidt 1957: Fig. 71-74; Askari Chaverdi 2004),
c. The excavations at Pasargadae, particularly those at Tal-i Takht (Stronach 1978: Fig. 106-124),
d. The upper levels at Chogha Mish (Delougaz and Kantor 1996: Pl. 73-75),
e. The brief excavations at Tepe Suruvan, located near Tol-e Spid (Atarashi and Horicuchi 1963: Fig. XV-XVIII),
f. The areas on and near the Apadana at Susa referred to as Secteur Nord (Boucharlat et al. 1987), and
g. The Ville Royale II Sounding (Miroschedji et al. 1987: 7-24).

[21] As mentioned in Chapter 1.2, Herzfeld incorrectly attributed the tomb at Da-o Dukhtar to Teispes or Cyrus I, who were both ancestors of Cyrus the Great, and suggested that it might contribute to the solution of the problem of the location of Anshan (Herzfeld 1926: 259; 1935: 35; 1941: 206). Given that the tomb has now been dated to the late 5th and 3rd centuries BC (see Chapter 1.2; Stronach 1978: 304; also see Gall 1993), it is likely that this tomb is significant for a different set of reasons, as it provides very specific insight into the behaviour of the *frataraka* kings of Fars.

[22] Models of population movement into new territories put forward to explain the human colonisation of the Americas (e.g. Anderson and Gillam 2000; Moore 2001), may be particularly relevant for characterising the movement of Neolithic populations into the Iranian highlands, although it remains to be demonstrated whether parts of the Zagros continued to be occupied in the late Pleistocene (see Chapter 7.1), and therefore whether it is relevant to apply models of populations moving into landscapes devoid of human populations in Iran.

[23] The appearance of evidence for agricultural practices in the earliest levels at the site led Hole to suggest that it is appropriate to ask whether agriculture is an essential prerequisite for animal domestication (Hole 1996: 276).

[24] Although the situation at Ganj Dareh seems to most closely fit the definition of transhumant pastoralism, Abdi's definition inherently assumes that the herders would have lived in campsites rather than villages, and that the archaeological signature of transhumant pastoralist is therefore distinct from that of villagers (Abdi 2003a: 405-407), which is a correlation that is not appropriate for Ganj Dareh.

[25] This includes fourteen sites with evidence for ceramic production (Sumner 1994b: 59, Figs. 2-4).

[26] Grid Nos. 61851577 (7.8 ha); 62861245 (6.0 ha - Toll-e Bashi); and 62865122 (7.0 ha), (Sumner 1994b: Table 2).

[27] It is important to point out that rather than assess the chronological variability of the Bakun material found on the surface, this approach relies on the presence or absence of material from earlier and/or later phases, and it assumes that where there are consecutive phases of occupation evident in the surface collections, that the occupation at the site was continuous. Sumner has described this approach as being based on reasoned probable cause (Sumner 1988b: 31). It makes assumptions about the nature of the occupation primarily on the basis of the presence or absence of material that indicates other phases of occupation at the site, and not on the chronological variability of the material found on the surface. Following this system of attribution, a site with evidence for Shamsabad and Bakun period occupation on the surface is envisaged as being occupied in the Early Shamsabad, Early Bakun and Middle Bakun phases. If the site also had evidence for Lapui period occupation, then it would also be envisaged as being occupied during the Late Bakun, Bakun/Lapui and Middle Lapui phases. If a site only had evidence for Bakun and Lapui material, then it is presumed only to have been occupied during the Late Bakun, Bakun/Lapui and Middle Lapui phases (see Sumner 1988b; 1994: 49). This has the potential to result in dramatically misleading population reconstructions. For example, Kole has made reference to a single period Bakun site with up to 10 metres of deposit (Grid 62865122; Kole 1980: 83; also Voigt and Dyson 1992: I.137; Sumner 1994b: Table 2). Following Sumner's method, this site is only considered to have been occupied in the Middle Bakun stage, but the depth of deposit indicates that there is a high potential that this site was also occupied in the Early and Late stages, even if it was not occupied during the Shamsabad and Lapui phases. Similarly, although there are 108 recorded Shamsabad sites (Sumner 1994b: Table 1), Sumner's system of attribution means that only 47 of these are attributed to the Early Shamsabad stage, while the remainder are presumably attributed to the Early Bakun phase (Sumner 1994b: Table 3). There are no Middle or Late Shamsabad stages, and this leads to an inflation of the figure for the Early Bakun period. Nonetheless, Sumner does make it clear that the next stage in our attempt to understand the Bakun period is to analyse the chronological and geographical patterns of Bakun stylistic variation, and this remains to be carried out.

[28] Although it will not be discussed in detail here, Sumner uses a specific method to estimate the settlement area for sites that have evidence for occupation dating to a specific period. If a site is dominated by material from one or more specific periods, the total site area is assigned to those periods, and if there is a relatively low sherd frequency of a specific period, then it is assigned an "average" area of 1.2 ha, or a "basic" area of 0.8 ha (see Sumner 1988b: 32; 1994: 49-50). As Sumner points out (1988b: 32), there is the possibility that some large settlements are overlooked amongst sites that have multiple phases of occupation.

[29] Sumner does note that there is an absence of both floral and faunal evidence from the sites that have thus far been excavated (1994: 59).

[30] At the least, the presence of these seals suggests that there was acknowledgement of the ownership of individual property at this time, and at most they attest to the existence of a complex centralised administration.

[31] Although Alizadeh notes that there is a lack of botanical analysis, he discounts the assumption that the inhabitants of Late Bakun sites were engaged in subsistence agriculture because of the low population density in this period, and the lack of evidence for irrigation (Alizadeh 2003b: 89).

[32] This paper presents a distillation of the author's undergraduate honours thesis, which was submitted to the Department of Archaeology, University of Sydney (2003). What appears below is a distillation of the arguments outlined in that paper.

[33] Dyson has argued that some of the tablets from Godin Tepe V/VI might actually belong to the transition to the "Proto-Elamite script proper" (Dyson 1987: 666). One inscribed tablet and a number of tablet blanks were also discovered at Tappeh Hesar, although their significance is not clearly understood (Dyson 1987: 657; also Damerow and Englund 1989: 2, n.8).

[34] It is notable that prior to Sumner's initial survey the Kur River Basin, no sites with bevelled-rim bowls had been discovered in the region. During his survey, Sumner discovered 26 Banesh sites, which were all located in the northwestern half of the region (Sumner 1972: 42-44). These sites were resurveyed by Alden, who also surveyed transects of the valley

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and carried out systematic and random surface collections, and thereby discovered a greater number of Banesh period occupations (Alden 1979: 35-43). Sumner freely admits that when his survey was conducted, there were no excavated sequences of material that could provide any refinement to his 4th millennium BC periodisation (Sumner 1972). An indication of potential problems associated with the Kur River Basin field survey methodologies can be garnered from Sumner's description of the realisation that the previously unknown Banesh phase had not initially been recognised (Sumner 1972: 24).

> "The first bevelled-rim bowl was not discovered until well after the survey was half completed. . . . Once the large bevelled-rim bowl sites around the village of Banesh were discovered, the typological position of the previously discovered sites became clearer and ten of those sites were revisited; in every case careful search discovered at least one bevelled-rim bowl sherd and other diagnostic sherds of Banesh Ware. This result was a disappointment in that it revealed the failure of the field procedure to produce such a distinctive marker as the bevelled-rim bowl on the first visit. On the other hand, it was encouraging as a demonstration that sites can be correctly diagnosed on the basis of incomplete collections even when the typological categories are not well known".

In questioning the degree of Banesh period site discovery in Sumner's survey, Alden asked how many of the previously located sites had Banesh occupation which had not been identified, and endeavoured to determine the number and characteristics of sites missed in previous surveys (Alden 1979: 35). Alden revisited a number of sites, walked transects across different areas of the valley, revisited disturbed Banesh sites and made collection of diagnostic sherds, mapped sites without extensive overburden and collected a 5% stratified random sample of surface material (Alden 1979: 36). The revisiting of sites was opportunistic, so there was no systematic selection of specific sites. Therefore, other than the Banesh sites, only sites that were near routes to, or in the vicinity of Banesh sites were resurveyed, resulting in the resurvey of 13% or 32 of the previously located sites without known Banesh occupation (Alden 1979: 36). There was a broad congruence between the two surveys, but for 4 of the 32 sites, there was a disagreement over the principle period of occupation on the site, 17 previously identified periods were not found on the second survey, while 27 additional occupation periods were discovered (Alden 1979: 37). The surveys agreed on 88% of principle occupations and 27% of additional occupations, the latter hardly being a desirable result. It total, five new minor Banesh sites were identified, and this led Alden to suggest that there may be as many as 30 additional sites in the Kur River Basin which have been located but where Banesh occupations were missed in the initial surveys (Alden 1979: 37). There were various reasons proposed for this discrepancy, but Alden proposed that Sumner missed less than 1/3 of the significant secondary occupations on discovered sites (Alden 1979: 37). This might be due to the initial methodology used, as in his transect surveys; Alden discovered sites in spots where there was no indication of a site in the aerial photographs (Alden 1979: 39). Two of the transect areas were selected as there was no reason to expect Banesh sites, while the other three were selected as they were likely to reveal undiscovered Banesh sites (Alden 1979: 39). On the Kuh-i Kuruni talus alone Alden discovered 13 additional sites (Sumner 1990: 104). The results of the transects led Alden to suggest that there may be between 1100 and 4180 undiscovered sites in the Marv Dasht – or about 1100 hectares of pre-Islamic occupation that remain to be identified (Alden 1979: 39). In percentage terms, Alden suggests that only 30% of the pre-Islamic sites in the region have been located, and the undiscovered sites may represent as much as 37% of the total area occupied during pre-Islamic times (Alden 1979: 41-2). These calculations have dramatic implications for possible interpretation of the available survey evidence for the region, and thereby of our assessment of the reconstructions of the cultural, socio-economic and political processes that have been put forward to explain this survey data.

[35] Much of Sumner's analysis is reliant on survey data from the Kur River Basin, which for the 4th millennium is divided into Lapui/Bakun, Middle Lapui and Banesh/Lapui stages of occupation (Sumner 1988b: 29, Table 4). It is notable that this methodology results in the suggestion that there are an identical number of sites attributed to the Late Bakun (65 sites; Sumner 1994b: Table 3) and the transitional Bakun/Lapui stages (65 sites; Sumner 1988b: Table 3). This is because the same criteria have been used to characterise each of the phases, and they should technically only be one stage.